UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ARLA FOODS AMBA,
Petitioner,

vs. IPR2025-01199
Patent 11,825,860

LEPRINO FOODS COMPANY,
Patent Owner.

* *

VIDEOTAPED DEPOSITION OF MARK R. ETZEL, PhD

TAKEN AT: PERKINS COIE, LLP
LOCATED AT: 33 East Main Street #201
Madison, Wisconsin

April 3, 2026

9:19 a.m. to 7:01 p.m.

* *

REPORTED BY ANNICK M. JAQUET, RMR, CRR

Leprino 2006 - 1
Arla vs. Leprino
IPR2025-01199

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ALSO PRESENT: Mark Lyle, videographer

I N D E X

Examination by: Page:

Mr. Krieger 5

Ms. Kaiser 311

E X H I B I T S

Exhibit Description Page

Exhibit A ... Patent publication bearing Publication Number US2012/0029165A1 31

(The original exhibit was attached to the original transcript. Copies were attached to all transcript copies.)

(The original transcript was delivered to Attorney Krieger.)

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Arla vs. Leprino
IPR2025-01199

TRANSCRIPT OF PROCEEDINGS

THE VIDEOGRAPHER: Good morning. We're going on the record at 9:19 a.m. Today's date is April 3, 2026. This is Media Unit Number 1 of the video-recorded deposition of Mark Etzel.

This is in the matter of Arla Foods AMBA, petitioner, versus Leprino Foods Company, patent owner. The case is being held in the U.S. Patent and Trademark Office before the Patent Trial and Appeal Board. The patent number is 11,825,860, IPR Number 2025-01199.

Today we are at the offices of Perkins Coie at 33 East Main Street in Madison, Wisconsin.

My name is Mark Lyle. I'm today's videographer. Our court reporter is Annick JaQuet. We're here on behalf of Digital Evidence Group.

First we'll have counsel introduce themselves and state who they represent, after which the court reporter will swear in the witness. We'll begin with noticing attorney, please.

MR. KRIEGER: Justin Krieger and

Megan Saia and Alexa Hunter with Kilpatrick Townsend on behalf of patent owner Leprino.

MS. KAISER: And Jessica Kaiser and Yuanfeng Gao from Perkins Coie on behalf of the petitioner Arla Foods.

THE WITNESS: I'm Mark Etzel, and I'm an expert witness on behalf of Arla Foods.

MARK R. ETZEL, PhD, called as a witness herein, having been first duly sworn on oath, was examined and testified as follows:

E X A M I N A T I O N

BY MR. KRIEGER:

Q Dr. Etzel, good morning.

A Good morning.

Q It's good to have you here today. Just -- you've just stated it, but could you state your full name for the record.

A Mark Raymond Etzel.

Q And have you been deposed before?

A No.

Q Have you ever been involved in a legal proceeding before?

A What -- could -- what do you mean by "legal proceeding"?

Q A -- a court matter, a matter before a court,

any court.

A Court matter. I created a trust for my estate. That would be a court matter.

Q But never -- never before a tribunal in terms of offering up your testimony --

A No.

Q -- in any way?

A No.

Q Okay. Is there anything here today that impacts your ability to understand questions or answer them truthfully?

A Anxiety, maybe.

Q Understandable. Understandable. Other than that, no?

A No.

Q Okay. If you don't understand a question at any time, just let me know, as you already have, and I'll try to rephrase it better so that hopefully you can understand it and answer it, okay?

A Okay.

Q I have trouble with this sometimes, but please speak slowly so that the court reporter can take down your testimony. Also, do your best to not interrupt my questions and I'll do my

best not to interrupt your questions [sic]. If at any time I move on to the next question and you feel like you haven't answered completely, just let me know and I'm happy to give you more time, okay?

A Okay.

Q This testimony here today and your deposition actually constitutes your formal IPR testimony. Do you understand that? Do you understand what I mean by that?

A No.

Q Okay. What I mean by that is that your testimony here is -- is your actual testimony such that the judges at the PTAB will -- might be reading your testimony, might be pulling up video to the extent we offer a video to the judges and that this is your actual testimony. In other words, we're not going to be bringing you into court and putting you on the stand --

A I understand.

Q -- like a conventional trial. Does that make sense?

A Yes. It doesn't supplant the declaration.

Q It accompanies the declaration?

A Yeah. It's paired with the declaration, yeah.

Q Your counsel may object from time to time.
A Uh-huh.
Q And assuming she does not instruct you not to answer, you still have to answer the question, okay?
A Okay.
Q I'll refer to the patent at issue in this matter, U.S. Patent 11,825,860, as the "860 patent." Okay? So when I refer to that 860 patent you know what I'm talking about, correct?
A Yes.
Q And I see you have a copy of it here with you?
A (Nodding.)
Q Correct?
A Yes.
Q And it looks like you have a copy of your declaration that you've offered in this case; is that right?
A Yes.
Q Okay. Did you bring anything else with you to your deposition today?
A No.
Q How did you prepare for your deposition?
A I reread my declaration primarily and met with

Perkins' legal team just to understand what the procedure is and what to expect and things like that.

Q Did you meet with them in person?

A Yes.

Q When did you meet with them?

A Yesterday we met.

Q And just the one day?

A We met the day before also.

Q Okay. So two full days preparing for your testimony?

A Pretty much a full day, yeah.

Q One full day or two full days?

A Today's Friday, so we met, I would say, most of the day on Wednesday, most of the day on Thursday. I don't know if it was a full day, but, yeah.

Q Okay. And who met -- who was with you in those meetings?

A Jessica Kaiser, Yaunfeng Gao. Those were the two people that were here the -- most of the time. Andrew Dufresne stopped in for lunch, I think, but we didn't really talk business at all.

Q Okay. Nobody else?

A No.

Q Okay. What did you review in preparation for your testimony here today in addition to presumably these two documents you have in front of you?

A The declaration, some of the references that the declaration refers to. My CV.

Q Do you recall which references specifically you referred to other than your declaration and the patent itself in preparation for your deposition?

A I don't -- I couldn't recite all of them to you. I don't remember all of them. I'll tell you the ones I remember.

Q Sure. Go ahead.

A We're talking about references that we discussed in preparation for today?

Q Correct.

A Right. Okay. Other than the declaration.

Q Correct.

A Yeah. Is it all right if I look at the declaration to -- to answer your question?

Q At this point, just because I don't want to delay things any more than we have to, we have a lot to go over, just what can you recall here

today that you actually went over?

A Just off the top of my head?

Q Correct. And if you can't remember, that's fine. I just wanted to get a sense of --

A There's the 785, 450, and I'd have to look to figure out.

Q Okay.

A I don't remember the number of the other one. There was three main Arla patents.

Q Okay. And by "450" and "785" you're referring to Nielsen 450 and Nielsen 785; is that right?

A Yeah. I'm going to go ahead and look here.

Q Go ahead and look.

A Because you're asking more and more questions about the details and so...

Q Okay. We'll just move on. It's fine. Did you review Bertelsen?

A Yes, I did.

Q Okay. Did you review Ozturk?

A I did.

Q And without looking at that, nothing else that you can recall specifically; is that right?

A I mean, I -- like I said, to really give you a good answer to this that's complete I'd have to look at my declaration.

Q Is there anything that you looked at that wasn't in your declaration in preparation for your deposition? Articles? Websites? Anything else that's not currently referenced --

A Not that I can remember.

Q Do you have any financial interests in the outcome of this case?

A No.

Q Do you have any stock in Arla?

A No.

Q Okay. Any stock in Leprino?

A No. No. I mean, maybe indirectly. You never know, because, you know, with these ETF funds there's 3,000 different investments. If you drilled down on one of these, maybe there's Leprino.

Q Did you review any documents that the parties submitted in this proceeding, and this would have been after your declaration was prepared, so they're presumably not referenced in your declaration, but did you review any documents that were filed by the parties in this IPR proceeding in preparation for your deposition?

A There's some things that are on the website,

like one of them is the schedule of what is going to happen when, you know, like when is the deposition date, when is the, you know, other things that would happen next, and I was curious about that because I'm trying to plan my vacation schedule for the year and so I wanted to know if -- what dates were coming up and so we did talk about that. That was another thing that was filed --

Q That's understandable.

A -- on the website. Another thing that was on the website was the declaration from Frederico Harte, and I was -- I looked at that briefly. I looked at what the -- when the PTAB issued a ruling about what cases were rejected and which ones were accepted for trial. I looked at that.

Q So when you say "the website," are you referring to the P-TACTS website, P-T-A-C-T-S?

A I googled this and this is what came up.

Q Okay. So did you review patent owner's preliminary response?

A I'd have to look at that to -- to see if I recognize that.

Q Okay. But you don't recall it sitting here

today?

A I mean, I -- I'm -- I'm 70 years old. I don't remember everything that ever happened.

Q Understood. Okay. But anything else specifically that you can recall having reviewed that the parties filed in preparation for your deposition?

A I just don't remember right now.

Q Okay.

A Yeah.

Q That's fine. You re-reviewed your declaration in preparation for your testimony --

A Yes.

Q -- as you've indicated?

A Yeah.

Q Was there anything there that you saw that is incorrect that you'd like to just address right out of the gate?

A There's a couple little things --

Q Okay.

A -- that I --

Q All right.

A Is it all right if I look in here?

Q Let's go ahead and look through there.

A Okay. Yeah, there's a couple little typo

things that I wanted to point out. Yeah. So one of them's on page 88 and there's -- there's a drawing with the blue beakers or the beakers.

Q Got it.

A All right. And at the bottom there is an equation that's really, really tiny print, and that equation then to the right they have another equation that's degree of denaturation, and that equation, there's a 1 minus brackets term to the left there at the very bottom of the page. So let me start over. On page 88.

Q Oh, I see. See. Yes, I see it.

A At the bottom there's a sentence that says, "transfer 10 milliliters of the supernatant liquid," so on, and then it has a little equation there --

Q I see.

A -- and it says, "DWP equals 1 minus," and this term in brackets. And there's equation to the right and they forgot to put the 1 -- we forgot to put the 1 minus.

Q So what should that say to the right of the equals sign at the equals sign?

A It should be 1 minus and then 4 times 3 over 2 divided by 1. And it's important to look at

that equation and know that 4 is not the number 4. It refers to the diagram above it.

MS. KAISER: And, Dr. Etzel, if you could remember just to let Mr. Krieger finish his question.

THE WITNESS: Okay.

MS. KAISER: Also pause to give me time to object. That would be great.

THE WITNESS: Thank you. Thank you.

BY MR. KRIEGER:

Q Okay. Any other errors or changes you have to your declaration?

A Yes. Okay. On page 98 in this there's two tables there -- thanks -- two tables there. That top table it says Sample 3 and Sample 4, and the bottom table it says Sample 5 and Sample 6. In the left-hand column of both of those tables there's something that says "DWP percent" in both of them, and that should really be just "TKN percent."

Q Okay. But TKN percent is indicated in the row above --

A Right. And so they're different TKN percents, and it goes back to this -- it all goes back to page 88.

Q Okay. So --

A And --

Q Go ahead.

A And also on page 89 is the same problem.

Q So each of the three charts on page 89 and 98 should have two rows reciting TKN percent; is that correct?

A Yes. Right. They're different TKN percents.

Q And what's the difference between those two TKN percents?

A So if you go back to the page 88 and that little flow diagram you'll see that at the top it says, "Take out 10 milliliters and send for Kjeldahl analysis." "K" is for Kjeldahl. That's a TKN 1, let's call it. And then at the bottom it says, "Transfer 10 milliliters of the supernatant liquid to an identified tube and send for Kjeldahl determination." The Kjeldahl is the K in the TK. And that would -- you could probably label that TKN 4 percentage.

Q Okay.

A And then to get the DWP percentage you would use the equation at the bottom of page 88.

Q Okay.

A So those are kind of typos.

Q Got it. And so you mentioned TKN 1 in the first --

A Yeah.

Q -- row of beakers. And after the second row of beakers you said TKN 4.

A Yeah.

Q Did you mean 4 or 2?

A 4.

Q Okay. Why is it 4?

A Because it says, "Transfer 10 milliliters of the supernatant liquid to an identified tube and send for Kjeldahl analysis determination, brackets 4."

Q Got it. Okay. Very good. Any additional changes?

A No. Oh, I did think of one other thing. It's going to take me a while to find it because I don't have a search engine here. I just have my thumbs. Oh, boy. It's a really minor thing. There's a place in here where frequently there's this ID period notation.

Q What page are you?

A Okay. In order for me to find the exact place it's going to take me a few minutes.

Q Okay. Try to explain it then and I'll see if I

can find it later --

A Okay.

Q -- through electronic search.

A And I'll give you an example because I don't have it in front of me right now. I'm just going to go through a few more minutes. I just don't see it under pressure here.

Q Okay. We can move on.

A But let me give you an example of what I'm talking about.

Q Sure. Sure.

A So let's say on page 58 in the fourth line from the bottom there is a CID dot period -- CID period comma and then 89, and the ID notation you can see is also on page 58 at the top on line 7 -- line 7.

Q Okay.

A There's a capital "ID" with a period.

Q Okay.

A All right. And even on the line just above that one there's a capital ID with a period. All right. This happens many, many times throughout the document, and there's one case where the capital ID with a period was merged with something right after it, and it looks

like it's like one thing, but --

Q Got it.

A -- it's not.

Q Okay. Very good. If we encounter that we'll make a note.

A Yeah.

Q Thank you very much. I appreciate that. Any other errors or changes that you can recall from your declaration?

A No.

Q Okay. Let's talk a little bit about your background. We have a copy of your CV, but I'm sure you're familiar with these questions, so if you need to refer to it at any time let me know. Where did you attend undergraduate?

A At Purdue University.

Q And what was your degree?

A Chemical engineering.

Q And graduate school, where did you go?

A The University of California-Berkley.

Q Okay. And what did you study there?

A Chemical engineering.

Q What did your research focus on while you were at Berkley?

A It was in the food area, actually, on flavor

loss during spray drying of foods.

Q Did it have anything to do with dairy products?

A No. Well, I mean, indirectly because a lot of dairy products are spray dried, but I did not work on dairy products.

Q Okay. What was the focus -- you received a PhD from Berkley; is that correct?

A Yes. Yes.

Q What was the subject matter of your dissertation?

A Could I look at my CV, please? Because then I can read what the title is.

Q Well, can you tell me generally what it related to without giving me the formal title?

A I'd rather just look at it.

Q Okay. Here is Exhibit 1,004, your CV.

A All right. My thesis title was "Loss of Volatile Trace Organics During Spray Drying."

Q What does that mean?

MS. KAISER: Why don't you just keep that.

MR. KRIEGER: Sure.

THE WITNESS: Okay.

MS. KAISER: Thank you.

THE WITNESS: What does that mean?

So the -- the food smells good, and what makes food smell good is the flavor molecules that are in food, and the reason we can smell them is because they are volatile. If -- if -- and so what we were studying is when you spray dry coffee, for example, to make instant coffee a lot of times it doesn't taste as good as if you just got a Starbucks made and drank it, and that's because the volatiles evaporate during spray drying.

Q Okay.

A So it's -- it's a general problem of all food, including dairy products, that flavor loss during spray drying occurs. And I studied how to prevent that and why it happens and the mass transfer behind it.

Q Okay. Did anything in your studies, undergraduate or graduate studies, relate in any way to dairy proteins or dairy processing?

A Could you ask that question again, please?

Q Did anything in your studies, undergraduate or graduate, relate to dairy proteins or dairy processing in any way?

A No.

Q Okay. Are you currently employed?

A No.
Q You're retired?
A Yes.
Q Okay. But you are an emeritus professor, correct?
A Yes.
Q So you're an emeritus professor at University of Wisconsin-Madison?
A I am.
Q Okay. Is that an honorary title or is it actually an employment position?
A It can be either, and so for me I actually had grant proposals and research projects and publications that occurred after I retired.
Q Okay. And then at some point that work ended and you were full-time retired; is that correct?
A I'm still doing work.
Q You're still doing work.
A Yeah.
Q Are you still receiving compensation from University of Wisconsin?
A Not this year.
Q Okay. So you're still conducting research as an emeritus professor at University of

Wisconsin?

A Let me think about that. I was.

Q When did that end?

A Last year.

Q 2025?

A Yes.

Q Do you consider yourself, in view of your retirement, as being up to date on current technology in the field of dairy proteins and dairy processing?

MS. KAISER: Objection to form.

THE WITNESS: Up to date in the field of dairy protein and -- I would say that nobody is up to date with all publications in dairy chemistry and dairy processing and dairy science. People specialize.

BY MR. KRIEGER:

Q Okay. I guess what I'm getting at is when I retire hopefully one day --

A Yeah.

Q -- I hope I don't review patents after my retirement. I hope I'm enjoying myself and not reviewing literature and things like that.

A Yeah.

Q Are you continuing to review literature even in

your current status as an emeritus professor and retired?

A When -- when -- when I'm -- when -- like for this task I have.

Q Okay. But outside of this -- I'm sorry. Go ahead. I didn't mean to interrupt you.

A And I would say that sometimes I do look at what's new in my specific area of expertise.

Q Okay. What about in your previous research outside of your preparation for this case? Did you conduct research in the field of dairy proteins and dairy processing?

MS. KAISER: Objection to form.

THE WITNESS: Could you repeat that question?

BY MR. KRIEGER:

Q Sure. Outside of preparation for this IPR proceeding --

A Uh-huh.

Q -- in connection with your work at the University of Wisconsin, did you conduct research in the field of dairy proteins and dairy processing?

A So the way I understand that question is did I do research during my career on dairy proteins

and dairy processing.

Q A little different, but, sure, yes.

A Yes, I did.

Q Okay. Can you tell me about that?

A So if you look at the CV you can see what -- what I did.

Q Okay.

A It's sort of a travel log of what I did during my career and whether it's related to that topic.

Q Okay. Do you recall your most recent grant that you received?

A That's in my CV here, I think.

Q Okay.

A It looks like -- you mean related to the dairy?

Q Just the most recent --

A Oh.

Q -- related or unrelated, most recent grant.

A So the most recent grant that I have was on ovarian cancer.

Q And that doesn't relate at all to dairy processing, presumably?

A Not that I know of.

Q Okay. So you had quite a diverse area of research, it sounds like, that extended well

beyond dairy proteins and dairy processing; is that fair to say?

MS. KAISER: Objection to form.

THE WITNESS: Yeah. I don't know if I would characterize it that way. I do have an area of -- that connects all of that and it's -- it's -- it's been true since I was a grad student at Berkley, and so there's a thread that connects it all.

BY MR. KRIEGER:

Q What is that thread?

A The thread is the area of separation science and technology. That's an anchor that I've come back to over and over again.

Q So your research regarding ovarian cancer relates to separation science as well?

A It does, yes.

Q Okay. How is that?

A Because women that get ovarian cancer frequently express a protein that's a mucin 16, which is a 5 million molecular weight protein, and you can test for it in the -- when women get ovarian cancer they develop this fluid in their abdomen. That's usually the first sign that they have cancer. And that fluid there's

a test for this MUC16 protein.

Q Okay.

A And what we're trying to do is develop an early detection method for ovarian cancer based on a blood test, and that requires you take a blood sample, and then you want to analyze it for MUC16, and that would allow early detection, early treatment, and better prognosis.

Q Okay.

A And it's a separations problem.

Q How do you separate it?

A So you want to know?

Q Well, in a high level, yes.

A Oh, okay. So we have to take a blood sample, make plasma out of it, and then we go through a series of separation steps which I discovered that allow us to isolate the MUC16 from the sea of other blood serum proteins.

Q What's the means of separation there?

A Huh?

Q What's the means of separation they use?

A So we use size-exclusion chromatography is one of the techniques, and then we -- we also have used in the past ion exchange chromatography and membrane separations.

Q Interesting. Okay. You were also employed by Polaroid Corporation --

A I was.

Q -- is that right?

A Yes.

Q What did you do there?

A So I did different things, you know, over time. And so -- could you be more specific?

Q Just what did you do? I mean, just --

A Okay. I was an engineer.

Q Okay.

A And I did research.

Q Okay. Didn't relate to dairy proteins or dairy processing --

A It did not.

Q -- presumably? Okay. Thank you.

MS. KAISER: And, Dr. Etzel, just please let Mr. Krieger finish his question --

THE WITNESS: Thank you.

MS. KAISER: -- before you start your answer.

THE WITNESS: Thank you.

BY MR. KRIEGER:

Q Did you have any publications, more specifically, patent publications -- do you

know what I mean by a patent publication?

A Yes.

Q So when you file an application, at 18 months it publishes and then if things go well it'll ultimately issue as a patent. You're familiar with the patenting process at a high level; is that right?

A Yes.

Q Okay. Do you have any patent publications relating to dairy proteins or dairy processing?

A Yes.

Q What are those?

A They're listed in my CV.

Q Okay.

A So if you look on page 6 of my CV this is an incomplete list because the Wisconsin patent agency tends to refile things and you get a new patent number with the same submission, but if you look at number 1 and number 2, I should say, production of Kappa-casein macropeptide for nutraceutical uses, that's -- that's a dairy-related.

Q Okay.

A Number 3 is dairy-related. Number 4 is dairy-related.

Q Okay. We don't need to go through all of those, but thank you.

A Okay.

(Exhibit A marked for identification.)

MS. KAISER: We're calling this A?

MR. KRIEGER: This is A.

BY MR. KRIEGER:

Q I'm handing you what's been marked as deposition Exhibit A and which purports to be a patent publication bearing Publication Number US2012/0029165A1. Do you recognize this document?

A Yes.

Q What is it?

A This is a patent application from February 2, 2012 where I'm listed as one of the inventors and it's related to dairy protein separations.

Q And there are several other inventors named on this application as well. Looks like from their location were they colleagues of yours at University of Wisconsin?

A Do you mind if I go through and tell you a little bit about each person?

Q Sure.

A Okay. So the first one's me. The second one

is a professor at the university here. The -- and the third and fourth one were graduate students of mine.

Q Okay. So is it fair to say that the experiments that are discussed in this application reflect experiments that you conducted? And by you -- it could be at your instruction but that you conducted?

MS. KAISER: Objection to form.

THE WITNESS: I did not review this in preparation for today, and it's from over 10 years ago, like 15, almost, and I would have to review this to answer your question.

BY MR. KRIEGER:

Q Okay. So as you sit here today you're unable to answer whether you conducted or instructed students to conduct the experiments that are disclosed here; is that correct?

A Do you mind if I look at this?

Q If you -- if it's brief, sure, go ahead, by all means.

A Okay. Yeah. The main issue with the brief is that this was filed over 15 years ago.

Q Sure. No. I totally understand.

A And so -- and you're asking me to remember

what's in it and who did what experiments is my understanding. And my understanding is you're really -- your question is related to who did the experiments?

Q No. I'm just asking if you recall that you conducted or instructed students to conduct the experiments that are described --

A Listed in here, okay. Got it. Yes.

Q I'm sorry. Go ahead.

A I would say yes.

Q Okay. Very good. If you could look at paragraph 2 of this publication.

A (Witness complies.)

Q It's on page 1. It mentions something called "charged ultrafiltration." Do you see that?

A Paragraph 2 of page 1?

Q Correct.

A Okay. And so I'm looking at this, and are you talking about where it says, "Purified dairy proteins have special value-added utility"?

Q No. Just the paragraph that is labeled paragraph 2 -- not the number 2, not description of related art, but you can see there's a paragraph number and brackets at the beginning of each paragraph. Do you see that?

A Yeah.

Q So there's a paragraph 2. Do you see that paragraph?

A Yeah.

Q So if you read that it mentions something called charged ultrafiltration, correct?

A Oh, okay. I see. So you're talking about where it says, "Field of the invention, the present invention relates generally to the field of protein chemistry"?

Q Correct.

A More particularly, it provides a process of separating milk proteins using charged ultrafiltration. That's what you're talking about?

Q Correct.

A Okay.

Q And I'm just asking you what is charged ultrafiltration?

A Oh, all right. It's ultrafiltration membranes that have a charge.

Q And why would you use those?

MS. KAISER: Objection to form.

THE WITNESS: Because they alter the separating power of the ultrafiltration

membrane.

BY MR. KRIEGER:

Q Do they make them more effective at the separation?

MS. KAISER: Objection to form.

THE WITNESS: What do you mean by effective?

BY MR. KRIEGER:

Q Do they make for -- do they have a better separation than a noncharged ultrafiltration?

A It depends on the situation.

MS. KAISER: And if you'd just let me have time, so I'll say same objection.

THE WITNESS: Okay.

BY MR. KRIEGER:

Q All right. Let's turn to Example 2. It's on page 5 of this deposition Exhibit A. If you could just read to yourself Example 2.

A All right. So this immediately refers to Example 1, and I need to read that.

Q Okay. Go ahead.

A (Reading.)

Q Actually, I can -- the questions I'm going to ask you don't pertain to the subject matter that's referenced here in Example 2, so these

are very basic questions, but if you -- after you hear my questions if you feel like you can't answer them unless you review Example 1, let me know, but I think the questions I'm going to ask you are going to be pretty basic, okay? So let's just proceed and with that understanding. Okay?

A Okay.

Q So go ahead and -- but I do want you to read Example 2.

A All right. (Reading.) Okay. I read it.

Q Okay. At a high level what would you -- how would you describe what's happening in this Example 2?

MS. KAISER: Objection to form.

THE WITNESS: Could you repeat your question?

BY MR. KRIEGER:

Q Just at a high level, how would you describe what's happening in this example?

A "High level" means like a breezy overview?

Q Yeah.

A Okay. Example 1. All right. So this, again, refers back to Example 1.

Q Which describes how the feed is formed,

correct?

A And the membrane that's being used.

Q Okay.

A All right. And so when I look at this I see that we used an uncharged 300 kilodalton ultrafiltration membrane and then a positively charged 300 kilodalton ultrafiltration membrane.

Q Okay. So it looks like it's a separation scheme; is that right?

A Right.

Q Okay. And Example 2 mentions the terms "permeate" and "retentate" at the beginning. Do you see that?

A Yes.

Q Okay. What is a permeate?

MS. KAISER: Objection to form.

THE WITNESS: You mean in the context of this example?

BY MR. KRIEGER:

Q Is that different than any other context?

A Well, yeah.

Q Okay. Explain.

A "Permeate" is sometimes actually a term that's used to describe certain liquids, you know, or

so it's -- it's a word that could be -- have many different meanings, and the context is really important when you use the word "permeate."

Q Okay.

A Yeah. And so -- so I can't give you a meaning of the word "permeate" without the context tied to it.

Q Okay. What about the context of Example 2? What does the term "permeate" mean here?

A That the word "permeate" in Example 2 refers back to Example 1.

Q Well, saying that there's this feed in Example 1, and they're making a first permeate, correct?

A Right. Yeah. So you can't -- Example 2 refers back to Example 1.

Q Okay.

A All right? And so the word "permeate" in Example 2 needs to reference Example 1, and you go back to Example 1 and it says that the -- there's a permeate and it describes the 300 kilodalton ultrafiltration membrane, and the permeate in this case for this patent application, it means the material -- that the

liquid that passed through the 300 kilodalton ultrafiltration membrane whether it was charged or not.

Q Okay. It also uses the term "retentate" in the context of this Example 2?

A Yeah.

Q What is the retentate?

A The retentate in Example 2 referenced as Example 1 is -- refers to the material that did not pass through the 300 kilodalton ultrafiltration membrane whether it was charged or uncharged.

Q Okay. And is that also a liquid?

A In this case it's a liquid, yeah.

Q Are there any cases where it might not be a liquid?

A Oh, sure, yeah.

Q Can you explain?

MS. KAISER: Objection to form.

THE WITNESS: Because membranes are used for gas separation. That's not a liquid.

BY MR. KRIEGER:

Q Fair enough. Any other --

A Membranes are used for separations of solid particles from liquids. Membranes are used for

separation of solid particles from gases.

Q Got it. That makes total sense, but in the context here for Example 2 you're saying the retentate would be a liquid, correct?

A That's correct.

Q All right. You also refer to the terms first, second, and third permeates in this example, and first, second, or third retentate. Do you recall the meaning of the first -- the adjectives first, second, and third in that context?

A I do.

Q And it might be helpful if you want to -- this example refers to Figure 2.

A Yeah.

Q So why don't you look at this in combination with Figure 2, if that's helpful.

A Yeah. And so if you look at Figure 2 there's a first membrane separation, which is the box with a diagonal line through it.

Q Labeled 1?

A Labeled 1. And then there's a second membrane separation, which is the box with the line through it labeled 2. All right. And so the feed stream, which in this case is the liquid

referred to in Example 1 and 2, passes through the first membrane separation and forms a first permeate and a first retentate, and the first permeate then flows into the second membrane stage in Figure 2, and the second membrane stage, which is fed by permeate from the first stage, forms a second permeate and a second retentate.

Q Okay. And so this Figure 2 it looks like illustrates, looks like, five different streams. Is that fair to say?

A Or more.

Q Well, I see five arrows and I assume the arrows represent individual streams, so this Figure 2 only shows those five streams. Isn't that fair characterization of what's shown in Figure 2?

A I disagree with that statement.

Q Okay. Why is that an incorrect statement?

A Because also in Figure 2 is an arrow that shows "recycle to FS."

Q Okay.

A Which is another -- so now you generate -- you take that liquid stream and you can recycle it back to the feed stream into Membrane Unit 1.

Q Okay. Okay.

A And so that generates another whole set of permeates and retentates.

Q Okay.

A So you count five arrows, but that doesn't include everything that's in Figure 2.

Q Okay.

A That's why I say that that's incorrect.

Q Okay. With that understanding and clarification, which I appreciate, regarding the recycled stream, it's fair to say that there are at least the five streams illustrated in terms of the feed stream, first and second permeates, and first and second retentates; is that fair?

A Yes.

Q Okay. And is it fair to say that these separation processes -- that the purpose of the separation processes is to make compositionally different streams? Is that --

MS. KAISER: Objection.

BY MR. KRIEGER:

Q -- fair to say?

MS. KAISER: Objection to form.

THE WITNESS: Could you rephrase that, please.

BY MR. KRIEGER:

Q Sure. It was kind of a lousy question. Is it fair to say that the separation processes form compositionally different streams?

A In figure --

Q In Figure 2.

MS. KAISER: Objection to form.

THE WITNESS: Which separation processes are you referring to?

BY MR. KRIEGER:

Q The two that are shown in Figure 2.

MS. KAISER: Same objection.

BY MR. KRIEGER:

Q Is that a difficult question, Doctor?

A I'm trying to understand your question.

Q Okay. What -- what don't you understand about that question? It seems like a very simple question to me, but I must be missing something, so can you elaborate on why you're confused?

A You know, the -- you know how like I'm a chemical engineer.

Q Sure.

A I have a chemical engineering undergraduate

degree and a graduate PhD degree and I've worked in this area for 30-some years, and words matter and sometimes words have different meanings to people who are experts in an area to people who are not experts in an area, and so some -- sometimes what seems clear to you is not clear to me.

Q Absolutely. Completely understand. That's why I'm asking you to clarify why that's -- why you're confused by that question.

A Yeah. Could you restate the question, please?

Q Sure. Sure. Is it fair to say that the separation processes in Figure 2 form compositionally different streams?

MS. KAISER: Objection to form.

THE WITNESS: What do you mean "compositionally different"?

BY MR. KRIEGER:

Q What does that term mean to you?

A I'm not sure. That's why I'm asking you.

Q How about have different compositions? Does that make more sense?

A So are you saying that P1 stream would have a different composition than P2 stream from R1 stream from R2 stream?

Q I can ask it this way. Is it fair to say that the four streams, P1, P2, R1, and R2, all have different compositions from one another?

A They may or may not.

Q They may or may not. Okay. But if the goal is to make these separations, presumably you're trying to form streams with different concentrations of one component or another. Is that fair to say? Otherwise why would you do the separation?

MS. KAISER: Objection to form.

THE WITNESS: I would say that you might do the separation even though the streams aren't different in composition, just to show that if you added a charge to the membrane they would be different.

BY MR. KRIEGER:

Q Okay. Is that what was done here?

A Yes. So my goal in this experiment was to see did adding a charge to the membrane change the way that separation occurs.

Q Okay.

A And so one of the membranes didn't have the charge and one of the membranes did have a charge.

Q Okay.

A So that's why it's hard to answer the question sometimes. It seems like a simple question, but it's a complicated answer.

Q Okay. No. I appreciate that clarification. You're the expert; I am not. So I really -- I seriously appreciate your clarifying that.

A Yeah. I just want to be clear with you --

Q Yeah.

A -- so that you don't wind up getting confused by my answer.

Q Okay. And you wouldn't consider -- well, let's start at the first separation step at -- that's labeled 1.

A Uh-huh.

Q It forms P1 and R1. Do you see that?

A Yes.

Q Do you recall if those two streams had different compositions from one another?

A I'd have to read through this.

Q You --

A It was 15 years ago.

Q We just read Example 2. So based on your reading of Example 2, are you able to make that determination?

A And so if you look at Example 2 and you go down to this line 64.

Q Uh-huh.

A It says, for example, a feed stream containing .5 grams per liter each of ALA and BLG was adjusted to pH 4.3, conductivity 8 millisiemen per centimeter and fed to a 300 kilodalton charged ultrafiltration membrane.

Q And it says the first permeate stream had higher ALA purity.

A It did, yes.

Q So doesn't that indicate that P1 had a composition that was different from R1?

A Yes. Right. Because the first permeate stream was higher in ALA, purity 77 percent, but the feed stream was 50 percent.

Q Okay.

A Yeah. And then the first retentate stream was higher in BLG and it started out at 50 percent and now it's 68 percent in R1.

Q Okay.

A But -- and that's for the charged one.

Q Okay. And the permeate is the stream that passes through the filter; is that correct?

MS. KAISER: Objection to form.

THE WITNESS: You said the permeate is the -- could you say that again?

BY MR. KRIEGER:

Q The permeate is the stream that's formed after passing through the filter; is that a fair characterization?

MS. KAISER: Same objection.

THE WITNESS: In this case for Example 2 and 1 that permeate is the liquid portion of the feed stream that was collected after passing through the 300 kilodalton ultrafiltration membrane.

BY MR. KRIEGER:

Q Okay. And so that distinction between a permeate and a retentate that we've discussed, in view of that a person who's skilled in the art would not consider the retentate R1 to be a permeate, would they?

MS. KAISER: Objection to form.

THE WITNESS: Well, you have to be careful when you say that.

BY MR. KRIEGER:

Q Okay.

A All right. Because the permeate becomes the retentate.

Q Explain.

A Well, so you have the P1 as the permeate and that actually -- part of that becomes the retentate.

Q How does part of that become the retentate?

A Well, if you look at Membrane Unit Operation Number 2 there you feed it with the permeate from 1, but it becomes the retentate in 2.

Q Understood. But my question was actually focused on that first step. Okay?

A Oh, okay.

Q So the first separation step there, nobody -- again, just looking at the first separation step labeled 1 --

A Yeah.

Q -- nobody skilled in the art would refer to R1 as a permeate; isn't that correct?

MS. KAISER: Objection to form.

THE WITNESS: Hopefully not.

BY MR. KRIEGER:

Q Okay. And conversely, again, disregarding what happens downstream, isn't it fair to say that nobody skilled in the art would refer to P1 as a retentate?

MS. KAISER: Same objection.

THE WITNESS: All right. When you say "skilled in the art," a person skilled in the art, what do you mean by that?

BY MR. KRIEGER:

Q That's actually a great question. Let's clarify that. So when I refer to a person of ordinary skill in the art --

A Yeah.

Q -- or I use the term -- I might use the term "POSA" --

A Yeah.

Q -- or "POSITA" --

A Yeah.

Q -- as abbreviations, I'm referring to a person of ordinary skill in the art from March 2023.

A Yeah.

Q Okay.

A Okay.

Q So as of that date --

A Yeah.

Q -- and with that clarification, which is a good one. I appreciate you asking that.

A Yeah.

Q Again, disregarding what happens downstream, isn't it fair to say that nobody -- no ordinary

person skilled in the art would refer to P1 as a retentate?

A So you're prefacing that with this POSITA.

Q Correct.

A Yeah. And so now we have to make sure that we think of POSITA as the same.

Q Absolutely.

A All right. And so I -- if you refer to my declaration, I've defined what I think a POSITA is.

Q Okay. I'm asking you with regard to the definition of POSITA, use the definition I just gave you, okay?

A Well, you just said the word POSITA, but you didn't give a definition.

Q Okay. If you need to review your declaration to see what a POSITA is, I have no objections to that.

A Well, I think the POSITA is in the -- the beholder here.

Q It's paragraph 10 and 11 of your declaration if you need to refresh your recollection.

A Yeah.

MS. KAISER: Are you asking him to apply that definition when you're talking about

a POSITA? I'm just trying to help.

MR. KRIEGER: That's what he's asking to do, so I'm fine with that.

MS. KAISER: Okay.

THE WITNESS: Okay. And so we're going to use my definition of POSITA in my declaration.

BY MR. KRIEGER:

Q Sure.

A Okay. And so I understand somebody -- this would have been someone knowledgeable and familiar with the field of dairy proteins.

Q Doctor, I don't need you to read it, but if you want to read it to yourself so you can refresh your understanding, that's fine. But it's already in the record. Just read it to yourself and make sure you're familiar with what's in there and then you can answer the question.

A It helps me to read it out loud.

Q Very well then. Read out loud. Just trying to save our court reporter.

A "This would have been someone knowledgeable and familiar with the field of dairy proteins and dairy processing that are pertinent to the 860

patent. The person would have a bachelor's degree in food science, chemical engineering, biological systems, engineering chemistry, microbiology, or a related field and two or more years of work experience or research related to dairy processing -- to processing dairy products or developing protein compositions for use in food products. Lack of work experience can be remedied by additional education and vice versa." All right.

Q Okay.

A And so we think of examples of it, you know, because not one person can be all these things.

Q Well, is that your testimony?

A Here's why I say that is that it says a person would have a bachelor's degree in food science, chemical engineering, biological systems, engineering chemistry, or a related field.

Q Okay.

A All right.

Q Would using your definition of a POSITA that you've just read --

A Yeah.

Q -- and in view of that --

A Yeah.

Q -- isn't it fair to say that no ordinarily [sic] person skilled in the art would refer to P1 as a retentate?

A Yeah. So I'm trying to understand that question.

Q Okay.

A All right. Thanks. So let's say that that person has a bachelor's degree in chemistry or microbiology and they've now graduated fresh out of undergraduate school and they're working on dairy products or developing protein compositions in food products, and so they're trying to make a protein milkshake beverage for sale in the grocery store. And they're testing different dairy proteins. And I took that student and I'd showed them this figure, and without the labels on it I said, "Which stream is the permeate? Which stream is the retentate?" They very likely could not identify it.

Q And that -- so -- and this is, just so I'm clear, your characterization of a person skilled in the art is somebody with a bachelor's, familiar with the field of dairy proteins and dairy processing?

A Right.
Q Okay.
A Right.
Q Pertinent to the 860 patent so not just any field, but pertinent to this patent and having two or more years of experience?
A Yes.
Q Again, having knowledge of the technology of this patent, you're saying they wouldn't understand --
A So --
Q They might characterize the permeate 1 as a retentate?
A That's different than what I'm saying.
Q How is that different?
A What you said is what you said.
Q Well I'm reading your definition.
A Yeah. And so what I'm saying is that if you took somebody who had a BS degree in chemistry and they're working in the dairy industry, they may incorrectly identify which stream is the permeate or the retentate. Now, if you then combine that with the -- they're an expert in the 860 patent, then it would be a different situation.

Q Okay. Well, your definition says in the field of the 860 patent.

A Right. And so --

Q And clarifies that they're knowledgeable and familiar with the field of dairy proteins and dairy processing and that they have two or more years of work experience or research relating to processing dairy products or developing protein compositions for use in food products.

A Uh-huh.

Q So with that definition that you --

A Yeah.

Q -- provided --

A Yeah.

Q -- you're saying that person might confuse a retentate with a permeate?

A I didn't say that.

Q Then what did you say?

A What I said is that somebody who has got that educational background and working in the dairy industry might not correctly identify what's the permeate stream and the retentate stream in a flow diagram.

Q Okay. But what you just told me is different than what you've written for your person of

skill in the art. So, again, I keep coming back to that.

A Yeah. So the difference is context.

Q Okay. So in the context of your complete description of what you think a person skilled in the art is, as we just discussed, in view of that description, your own characterization, complete characterization --

A Uh-huh.

Q -- is it your testimony under oath that that person would not understand the difference between or might mischaracterize P1 as a retentate?

A That's a mischaracterization of what I just said.

Q So you -- again, I'm -- I don't feel like you've really answered based on your complete definition of what a POSA is.

A Yeah.

Q So with that complete definition that you've provided, not a modified version that leaves anything out, but with the complete definition that you provide in paragraph 11 of your declaration --

A Yup.

Q -- would that POSA ever refer to P1 as a retentate?

A Yeah. And so thank you for that specification, because that's a different question than I was answering up until now.

Q Okay. I'm glad we clarified it.

A And the reason is is because we started talking about your question and then you said, well, would a POSITA understand that, and I said, well, that depends on what a POSITA is defined as. And then I -- you said, well, what do you define it as or something like that, and then we wind up referring back to my declaration, this paragraph 11, and now we come up with a more clarified discussion.

Q Wonderful.

A All right. And here we are. Now we're saying a POSITA is what's in 11, not parts of 11 but all of 11, from top to bottom 11, all right?

Q Correct.

A Okay. And so -- and that's different than where we started out.

Q Okay. So with that understanding, what's your answer to the question?

A Okay. What was the question, please?

Q You -- okay. The question is using your --

MS. KAISER: So do you want him -- maybe I can just help. Do you want him to set aside the questions before and just answer the question that you're going to ask him now?

MR. KRIEGER: That would be wonderful.

MS. KAISER: Okay. So just listen to the question that he's asking and try and answer that question, but put aside some of the back and forth.

THE WITNESS: Okay.

MS. KAISER: Yeah.

BY MR. KRIEGER:

Q So in view of the clarification that we've just gone over and using your definition of a person of ordinary skill in the art --

A Yeah.

Q -- in paragraph 11 of your declaration, is it fair to say that that individual would not refer to P1 as a retentate?

MS. KAISER: And this was in the context of Figure 2 --

THE WITNESS: Yeah.

MS. KAISER: -- of the 165

application. Okay.

THE WITNESS: Okay. So the way I understand this, we're talking about Figure 2, and you're saying POSITA by my definition in this -- the Section 11 of my deposition, defined that way with everything in it and nothing missing, looks at Figure 2 and says -- and says -- and what would be the question I would ask that POSITA? I guess I'm still a little bit vague about what you're asking me.

BY MR. KRIEGER:

Q Okay. We may have to move on, and if you're not able to answer the question --

A I can answer the question if you help me.

Q I've asked it several times.

A Well, the question keeps meandering.

Q Let me ask it one more time, and if you're unable to answer I'm going to move on and just assume that you just cannot answer that question.

The question is using your definition in paragraph 11 of your declaration of a POSA, is it fair to say that that POSA would not refer to P1 as a retentate?

A I would hope that's true.

Q So --

A If they did, they would have made a mistake.

MS. KAISER: Justin, we've been going over an hour. Can we take a break?

MR. KRIEGER: I think that's fine. This is a good time.

THE VIDEOGRAPHER: Okay. We'll go off the record. The time is 10:29 a.m.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record. This will mark the beginning of Media Unit Number 2 of the video-recorded deposition of Mark Etzel. Today's date is April 3, 2026. The time 10:44 a.m.

BY MR. KRIEGER:

Q Dr. Etzel, one thing I forgot to mention at the beginning of our deposition was if you do need a break at any time, just let us know. I know it's a long day, and so I appreciate that. As long as there's not a question pending, you're free to take a break at any time.

A Okay. Thank you.

Q All right. I do have a couple more questions about this publication that we were just discussing.

A Okay.
Q Deposition Exhibit A. So if you could, please, look at Figure 2 again.
A Uh-huh.
Q And I -- I'm going to change this up a little bit and ask your perspective rather than a person of ordinary skill in the art, okay?
A Okay.
Q Do you understand that distinction?
A Yes.
Q Okay. So with that understanding, you wouldn't consider P2 here to be a retentate, would you?
A No.
Q And you wouldn't consider R2 to be a permeate, would you?
A No.
Q And -- okay. Let's go ahead and turn to Exhibit 1,008.
A Are we done with this?
Q I'll provide it to you in a moment. Okay. I'm handing you what's been marked as Exhibit 1,008. This is the Ozturk reference I believe we mentioned earlier; is that correct?
A Is that a question to me?
Q Yes.

A Yes.

Q Let's look at Figure 1 on page 3. Do you recognize this figure?

A Page 3 is page 279?

Q Correct.

A Okay. And it says Figure 1 on page 279.

Q That's right.

A Okay.

Q Do you recognize this figure?

A Yes.

Q You discuss it in your declaration, correct?

A Yes.

Q Okay. Can you walk me through what's shown here?

A So it's a series of unit operations and -- and also just boxes that are descriptive, and the first unit operation is the cheese vat where you make cheese, and the other fluid coming off of it would be the cheese whey. And then that flows into another unit operation called a cream separator or a centrifuge and that separator spins off the whey cream, and the other stream is the defatted whey. And the next box is just a description box. It's not a unit operation. And it says, "Whey: small

globules, whey proteins, lactose, oligosaccharides, and salts," and of course water. And then that -- that defatted whey flows into another unit operation and that's an ultrafiltration membrane unit operation where the fluid is -- the cheese whey is processed through a membrane separation into a UF retentate and a UF permeate. Then those two streams flow into these descriptive boxes. They're not unit operations. The UF retentate is called a whey protein concentrate. It contains small globules and whey proteins and those other things in there, including water. And the UF permeate is called whey permeate, and it's lactose, oligosaccharides, salts, and of course water.

And then the -- the whey protein concentrate flows into another membrane unit operation, a microfiltration membrane, and that separates that whey protein concentrate into an MF retentate and an MF permeate. And the MF retentate flows into a descriptive box, not a unit operation, and it's called whey protein phospholipid concentrate, a WPPC, which is small globules and residual whey proteins,

water, and other things. And the MF permeate flows into another descriptive box, not a unit operation, and that's called whey protein isolate. I think that's a misspelling with the "S" on it. And it says that's whey proteins, but of course it contains other things like lactose and water and salts and things like that. So it's kind of a, you know, the diagram itself is incomplete in the sense that it's sort of a -- a short summary of what's going on and it's a mix of unit operations and descriptive boxes.

Q Got it. Okay. Thank you for that. Several of the boxes refer to, as you indicated, small globules.

A Uh-huh.

Q And the term large globules is also mentioned. What are large or -- and small globules, if you know?

A I can only guess. I'd have to see if she actually defines what those are, but I believe that what she's referring to is described in Section 1, the introduction, where she says, "Milk contains a diverse set of bioactive components," and then she says, "milk fat

globules, MFGS," and you can see that in the Section 1, the introduction. Milk fat globules, and what I think she means by "globules" is described as small globules. So what I think she's got -- this Figure 1, I think she means small globules; I think she means milk fat globules.

Q Okay. What are large globules, if you know?

A Where does it refer to large globules?

Q Under whey cream it says that there.

A Yeah. Oh, okay. Let me just look at that for a second. Oh, yes. Okay. All right. Large globules. So the milk fat globules that she defines up in the front range in size from .2 to 15 microns and have an average of 4, and so there's a range of sizes of milk fat globules. And I think what she means is that the smaller ones are removed by the centrifugation step.

Q And so would large globules presumably be bigger than 15 microns?

A I -- I'd have to read through what she says here.

Q Okay.

A But I would say that normally the cream separator is like -- as you know with, like,

whole milk if you just let it sit and it's not homogenized the cream rises to the top.

Q Lactose.

A And that is milk fat that is big enough to flow to the top. All right. And -- but there's still milk fat in the -- in the phase below. It's just that it didn't rise to the top. And so a cream separator can't remove 100.0 percent of the milk fat or the whey cream, whey fat. It'll -- it'll remove the bigger particles that are easier to float.

Q Okay.

A Yeah. That's what I think, based on my knowledge, she means by this diagram.

Q You also mentioned UF. What does "UF" mean?

A Ultrafiltration.

Q And what does "MF" mean?

A Microfiltration.

Q How are those different from one another?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Are those different from one another?

MS. KAISER: Same objection.

THE WITNESS: Okay. How -- what did you say?

BY MR. KRIEGER:

Q Is ultrafiltration different than microfiltration?

A I believe it is.

Q Okay. How are they different?

MS. KAISER: Objection to form.

THE WITNESS: Well, people refer to them with different names.

BY MR. KRIEGER:

Q Well, I mean they have different names.

A What do you mean how are they different?

Q They're different words. I agree they're different words.

A Yeah.

Q I'm asking you what those words relate to. Would a microfiltration process be different than an ultrafiltration process?

A I know that sounds like a clear question, but it's not, actually, because there's some overlap.

Q What would be the overlap?

A And so she mentions in this article about microfiltration, and let me just see where she says that. Okay. So like on page 293 she has, like, in Section 3.7.

Q Okay.

A And on III she says, "Microfiltration with a 0.1 micrometer pore size is used to produce highly purified whey protein isolate permeate by the dairy industry." And so microfiltration is defined as 0.1 micrometers. All right.

Q Okay.

A Okay. One micrometer is a thousand nanometers.

Q Uh-huh.

A So .1 micrometers is a hundred nanometers. Some people call that ultrafiltration.

Q What would you call it?

A I've seen it used both ways.

Q I'm not asking what you've seen. What would you call that?

A I might use -- so when I see somebody says, oh, it's a thousand kilodalton ultrafiltration membrane, I'm like that's, like, really no different than a microfiltration membrane with a small pore size.

Q Okay. When you see --

A It's a gray scale.

Q Sorry about that. Okay. But when you see a flow diagram like the one in Figure 1 --

A Yeah.

Q -- where they have two different separation steps, one being ultrafiltration and the other being microfiltration, is it a safe assumption that the pore size in the microfiltration is going to be larger than the pore size of the ultrafiltration?

A I would not say that because it depends on the application and the context.

Q The application that's shown here.

A Okay. So if you look at the application in the context of this Figure 1 where we're talking about making whey protein concentrate, that ultrafiltration membrane there is typically of a pore size much smaller than the microfiltration membrane down below. So, for example, where -- where she's got the MF retentate, MF permeate she's already said that's a .1 micron membrane. All right? And then let me look in here what she says about the ultrafiltration stuff. I don't have this whole thing memorized, so I have to look back. I don't see right off the bat where she says what the molecular weight cutoff is of the ultrafiltration membrane.

Q Step 2, I think, Roman numeral 2, I think it

is. We can move on. That's -- it's --

A Oh, is it? Okay. Let me look at that. Oh, yeah. You're right. Yup. 10 kilodalton. And that makes sense. And so -- so based on her text, you know, you would say that that ultrafiltration membrane is 10 kilodalton and the microfiltration in the membrane is 0.1 micrometer, yeah.

Q Got it.

A So they're different in pore size.

Q Okay. So let's take a step back from this figure.

A Uh-huh.

Q If a process required microfiltering a cheese whey retentate, what does that mean to you?

MS. KAISER: Objection to form.

THE WITNESS: In the context of the -- of the Ozturk paper, do you mean?

BY MR. KRIEGER:

Q I'm just asking you as -- you in your knowledge as an expert in the field, what does that mean to you?

A Say the question again, please?

Q Sure. If a process required microfiltering a cheese whey retentate, what does that mean to

you?

MS. KAISER: Objection to form.

THE WITNESS: I think that that -- it sounds like a simple question, but that's not a simple question.

BY MR. KRIEGER:

Q What does it mean to you?

A It depends on the context.

Q Okay.

A If I was in a cheese plant and they were making cheese in a cheese vat and they wanted to pass that cheese whey from -- that came right off the cheese vat into the whey processing line, they might use microfiltration. And it would be very different than if somebody said I've got whey -- cheese whey that came off the cheese vat, went through a cream separator, and now I'm going to microfilter it. So the context is everything.

Q Okay. So in the context of what you're seeing here in Figure 2 -- Figure 1 -- excuse me -- of Exhibit 1,008 --

A Uh-huh.

Q -- in this process if they're referring to microfiltering the cheese whey retentate, what

does that mean?

MS. KAISER: Objection to form.

THE WITNESS: So here's what I think -- okay. Which cheese whey retentate are you talking about?

BY MR. KRIEGER:

Q Is there more than one cheese whey retentate?

A There is.

Q Okay. Explain.

A We start out with cheese whey at the top. We go through the cream separator. Then we do an ultrafiltration step and there's an ultrafiltration retentate. That passes into the microfiltration membrane. It's still cheese whey. It's just been filtered. And now we've produced another stream that's a cheese whey retentate and a cheese whey permeate but from the microfiltration membrane.

Q Okay.

A So there's two cheese whey retentates.

Q In your view what are the two cheese whey retentates?

A So --

MS. KAISER: Objection to form.

THE WITNESS: So in Figure 2 -- in

Figure 1 of this that we're referring to there is an ultrafiltration retentate that is from the cheese whey from the cheesemaking process in the cheese vat.

BY MR. KRIEGER:

Q Okay. Like derived from it, correct?

A Yeah.

Q All right.

A And there is a UF permeate, which is the ultrafiltration permeate of the cheese whey from the cheesemaking operation at the top.

Q Correct.

A Got it. And so -- so we have this whey permeate, which is really the cheese whey -- is the [sic] really cheese whey ultrafiltration permeate and then we have a whey protein concentrate, which is really the cheese whey ultrafiltration retentate.

Q Okay.

A And the cheese whey ultrafiltration retentate is sent to a second unit operation, which is a microfiltration membrane.

Q Okay. Hold that. Before we get there --

A Yeah.

Q -- the ultrafiltration permeate you just

mentioned --

A Yeah.

Q -- that's not a cheese whey retentate, correct?

A Yeah, it's not.

Q Okay. Okay. So now continue.

A Yeah. And so the cheese whey ultrafiltration retentate is passed into the microfiltration membrane, all right, and you have a cheese whey microfiltration permeate, which is also the cheese whey ultrafiltration retentate. Do you see that?

Q So are you -- is it your testimony here that the microfiltered permeate is a retentate?

A It's my testimony -- you know, the words matter here -- that the -- that the -- in Figure 1 the microfiltration permeate shown in this diagram is the product of a cheese whey ultrafiltration retentate.

Q Okay. It's the product of a cheese whey ultrafiltration retentate.

A Right.

Q But it's not, in fact, the cheese whey retentate? Is that fair to say?

MS. KAISER: Objection.

THE WITNESS: Well, that's a --

that's a vague question.

BY MR. KRIEGER:

Q Why is that a vague question?

A Because you've left off the word "microfiltration" and "ultrafiltration."

Q Well, we're talking about this exact stream, but --

A I agree.

Q -- the context is understood, but if we need to clarify it we can.

A When you say that sentence --

Q I'll ask it again.

A Yeah.

Q I'll ask it again and I'll clarify.

A All right.

MS. KAISER: And maybe just not -- try not to talk over him.

THE WITNESS: Yeah. Thank you. It's a bad habit that I have.

BY MR. KRIEGER:

Q So you just testified that, quote, "In Figure 1 the microfiltration permeate shown in this diagram is the product of a cheese whey ultrafiltration retentate," unquote. Okay? That's what you just said.

A Yeah.

Q And so in view of that characterization, isn't it fair to say that the microfiltration permeate is not the cheese whey retentate, although it is a product of the cheese whey ultrafiltration retentate?

MS. KAISER: Objection to form.

THE WITNESS: Yeah. And so -- yeah. And so the -- I have trouble understanding you when you say that because in some cases you're deleting the word "ultrafiltration" and you're just talking about a cheese whey permeate, and there's two cheese whey permeates here.

BY MR. KRIEGER:

Q I'm not so sure I agree. I'm going to read the question again.

A Okay.

Q Just listen very carefully, okay?

A Yeah.

Q And if I missed a word you can clarify. You let me clarify and I will.

A Okay.

Q But what I asked was in view of your characterization a moment ago, isn't it fair to say that the microfiltration permeate is not

the cheese whey retentate, although it is a product of the cheese whey ultrafiltration retentate?

A Okay.

MS. KAISER: Objection. Objection to form.

THE WITNESS: You say "cheese whey retentate" and then you say "product of the cheese whey ultrafiltration retentate."

BY MR. KRIEGER:

Q Okay. Let me modify that question. In view of your prior characterization, isn't it fair to say that the microfiltration permeate is not the ultrafiltration cheese whey retentate, although it is a product of the cheese whey ultrafiltration retentate?

MS. KAISER: Objection to form.

THE WITNESS: That's a lot of words in that. I'm just trying to make sure I understand what you're saying.

BY MR. KRIEGER:

Q I understand. And if you can't answer it, that's fine. I can move on.

A I can answer it. It's just a matter of making sure I understand what your question is.

Q I understand.

A So could you please repeat it? And just a little more slowly, please.

Q Sure. Sure. In view of your prior characterization, isn't it fair to say that the microfiltration permeate is not the ultrafiltration cheese whey retentate, although it is a product of the cheese whey ultrafiltration retentate?

MS. KAISER: Objection to form.

THE WITNESS: So I think in Figure 1 that the cheese whey after the cream separator is divided into two streams, one of which is the ultrafiltration cheese whey retentate and the other is the ultrafiltration cheese whey permeate. And the ultrafiltration cheese whey retentate flows into a second unit operation, which is the microfiltration membrane, and it's split into two streams: the ultrafiltration -- the microfiltration membrane retentate of the ultrafiltration membrane retentate and the microfiltration permeate of the ultrafiltration membrane retentate.

BY MR. KRIEGER:

Q That's quite a word soup. Give me a second to

unpack that.

A Okay.

Q Okay. I understand that answer. I'm just not sure it answers the question I asked.

A Really.

Q So I'm going to ask it again. You characterized what you're seeing here.

A I am.

Q But that doesn't really answer the question --

A Oh.

Q -- which is isn't it fair to say that the microfiltration permeate is not the ultrafiltration cheese whey retentate, although it is a product of the cheese whey ultrafiltration retentate? It seems to me that's a yes-or-no question. Either it is or it isn't. What would your answer to that be?

MS. KAISER: Objection to form.

THE WITNESS: So you characterized what I said as a word -- as word soup.

BY MR. KRIEGER:

Q Well, I didn't mean that in -- there's a lot of words in there, so I had to unpack it. I didn't mean --

A Yeah. And when you say -- what you're saying

it sounds to me like a word soup, and so just as much as it's hard for you to understand what I'm trying to say, it's hard for me to understand what you're trying to say. And I think it's, you know, probably because we're coming at this from different educational and experience backgrounds. And so the way you're saying it isn't the way I think of it.

Q Okay. I understand.

A All right. And so -- so I don't want to -- I think the way you're saying it is fine for you and it makes sense to you, but I want to make sure that -- but it's not the way I described it to you. I thought we both kind of said the same thing.

Q So are you unable to answer that question?

A I can answer that question.

Q Okay. Then what's the answer?

A But I'm asking you to repeat your question.

Q Sure. I will repeat it again. In view --

A And slowly, please.

Q Okay. In view of your prior characterization, isn't it fair to say that microfiltration permeate is not the ultrafiltration cheese whey retentate, although it is a product of the

cheese whey ultrafiltration retentate?

MS. KAISER: Objection to form.

THE WITNESS: You started that sentence off with a preamble.

BY MR. KRIEGER:

Q Yes. Because earlier you stated this, and I'll read this back to you again. So you just testified, quote, "In Figure 1 microfiltration permeate shown in the diagram is the product of a cheese whey ultrafiltration retentate," unquote. So you said it was a product --

A Uh-huh.

Q -- of the retentate.

A Yeah.

Q And so my -- that's the -- that was the preamble that I was referring to. With that understanding and that testimony, isn't it fair to say that microfiltration permeate is not the ultrafiltration cheese whey retentate, although it is a product of the cheese whey ultrafiltration retentate?

MS. KAISER: Objection to form.

THE WITNESS: So what I understand you saying is that the -- microfiltration permeate is not the same as the ultrafiltration

membrane retentate, but it is a product of the ultrafiltration membrane retentate, a product that's passed through microfiltration membrane unit operation.

BY MR. KRIEGER:

Q Correct.

A Yeah. That's what I look at and I see this, I say yes, I agree with that.

Q Okay. And as a result, although that microfiltration permeate is a product of that microfiltration step, that microfiltration permeate itself is not the cheese whey retentate, correct?

MS. KAISER: Objection to form.

THE WITNESS: Yeah. So the problem with the phrase "cheese whey retentate," that's where I'm getting hung up on this, is that you delete the word whether it's from microfiltration unit operation or the ultrafiltration unit operation. You're just using cheese whey retentate, but there's two cheese whey retentates here.

BY MR. KRIEGER:

Q What are the two cheese whey retentates?

A Well, so there's the cheese whey that flowed

into the ultrafiltration unit operation, became the ultrafiltration membrane retentate, and there's the cheese whey that flowed through the microfiltration membrane and that's the -- called the MF permeate. And then there's cheese whey that was retained by the microfiltration membrane, the MF retentate. And so when you delete the unit operation from the reference I'm not sure which unit operation you're referring to.

Q So are you saying that WPC and WPPC are cheese whey retentates?

A So my problem is you're using this word "cheese whey retentate" without referring to the unit operation it came from.

Q Okay. So --

A But there's -- but there's two unit operations and two permeates and two retentates from those unit operations. They all start with the cheese whey from making cheese up at the top with the cheese vat. And so when you delete the unit operation when you're referring to the retentate and permeate I'm like, okay, now I don't know. You know, it's like there's Susan and Bobby and now you start talking about Susan

and Bobby and then all of a sudden you say "they." I'm like I don't know which one you're talking about now.

Q Respectfully, I don't think I'm ignoring the unit operations, because I'm referring to this figure which shows the unit operations, so in the context of this figure which shows exactly what you're saying, the unit operations. I asked you is it your testimony that the WPC --

A Yeah.

Q -- and the WPPC are the cheese whey retentate?

MS. KAISER: Objection to form.

THE WITNESS: Okay. So my problem is then you keep coming back to where you delete the unit operation and you say the "cheese whey retentate."

BY MR. KRIEGER:

Q So it doesn't make sense to call those cheese whey retentates? Is that what you're saying?

A So it would be better if you said to me that cheese whey ultrafiltration retentate or the cheese whey microfiltration retentate that was made from the ultrafiltration -- but you're just deleting the unit operation. You're just saying "cheese whey retentate."

Q Okay. So what would you view the cheese whey retentate to be in Figure 1?

MS. KAISER: Objection to form.

THE WITNESS: The -- so I'm -- I'm just trying to make sure that we're communicating here.

BY MR. KRIEGER:

Q Can you answer that question?

A Because -- and I'm trying to explain why that's a hard question for me to answer.

Q Let me just stop you because I need you to answer my question. Can you answer that question? Yes or no?

MS. KAISER: Objection to form and already asked and answered.

THE WITNESS: Yeah. And so I would say that when you say it that way and you delete the unit operation, just cheese whey retentate, now there's multiple possibilities for me to define that in my mind and -- and you're fine before that point because you're saying the cheese whey ultrafiltration retentate or the cheese whey microfiltration permeate and you've got the unit operation in there and then, boom, you drop off all the unit

operations and you say "cheese whey retentate."

BY MR. KRIEGER:

Q Okay. This is -- so I'm not dropping off the unit operations. Figure 1 shows the unit operations, okay, so in the context of what's shown in Figure 1, which includes the unit operations, okay, which stream would you characterize as the cheese whey retentate?

MS. KAISER: Objection to form.

THE WITNESS: Oh, that's the really frustrating for me because you again dropped off the unit operation and you're referring to cheese whey retentate.

BY MR. KRIEGER:

Q Okay. We're going to have to move on. I mean, if you can't answer that question and maybe it's a bad question --

A I can tell you what would help me answer your question.

Q What's that?

A Is when you use the word "cheese whey retentate," define which unit operation it's coming from.

Q So I just want to ask you, you cannot answer the question -- I'm asking this, is it true

that you cannot answer the question when you look at Figure 1 and say what is the cheese whey retentate; is that correct?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Is that correct?

A Do you mean cheese whey microfiltration retentate or cheese whey ultrafiltration retentate?

Q If the term is vague and you just don't know what it means then that can be your answer, but I need an answer to that question. And if you can't answer that because it's a vague question I'll move on. But that's my question and I would like an answer. But I haven't gotten an answer.

A So you're asking me to -- to say when you say the word "cheese whey retentate" and I've told you that there's a cheese whey retentate -- cheese whey is the starting material, and so somebody could call the ultrafiltration retentate a cheese whey retentate.

Q Okay.

A And somebody could call microfiltration retentate a cheese whey retentate. There's two

possibilities there, A and B. And then I say so which one is the cheese whey retentate and I'm thinking, well, okay, so he dropped whether it's come off the ultrafiltration or microfiltration membrane, so it could be A, it could be B, and you're saying but you need to decide. Can you answer my question? Which one is the cheese whey retentate? And I'm thinking, okay, here's A, here's B. They both qualify for that.

Q Okay.

A And he's telling me I have to pick.

Q But it has to be one of those?

A You're trying to force me to pick because you're dropping it off.

Q Sir, it has to be one of those, correct?

A What's "it"?

Q The cheese whey retentate has to be one of those two components, the WPC or the WPPC that you just mentioned?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Correct?

A And all I'm trying to do is say the phrase "cheese whey retentate" is vague and undefined

in the way you're using it. I understand everything else that you've said, but -- and I've explained what the problem is to you in many, many different times, and you still keep coming back and use that phrase "cheese whey retentate" when we both know that there's multiple answers to that question and you're asking me to pick one.

Q Have you ever heard of anybody referring to a WPPC as a cheese whey retentate in your experience?

MS. KAISER: Objection to form.

THE WITNESS: If they refer to it as a cheese whey microfiltration retentate I would say yeah, I have.

BY MR. KRIEGER:

Q Yeah. But you've never heard somebody call it specifically a cheese whey retentate?

A Sometimes when people, so to speak, use shorthand language that's ill-defined, you might hear that.

Q Can you cite to any literature that uses the term "cheese whey retentate" in referring to a WPPC as you sit here today?

MS. KAISER: Objection to form.

THE WITNESS: Any, I mean, it may even say that in here, but I'd have to go through and read this and figure out if she ever dropped the unit operation from the definition.

BY MR. KRIEGER:

Q Okay. But you can't today point me to anything that -- any other literature that refers to WPPC as a cheese whey retentate?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Is that right?

A That's a good question, because it's possible even in 860 they're referred to something as a cheese whey retentate and it's ill-defined as to where -- what unit operation made it.

Q Okay. But you'd certainly never refer to the permeate, the WPI, as being a cheese whey retentate, right?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Because it's a permeate?

A It's a microfiltration membrane permeate made from an ultrafiltration membrane retentate.

Q So that's how you'd characterize it?

A Yeah, that's how I'd do it. But you're dropping the unit operation from the word.

Q And you have to have the unit operation in order for that to make sense?

A In order for it to make sense to me, you do.

Q Okay.

A And if -- if somebody did what you're doing and they just dropped the unit operation from the cheese whey retentate word, I'd have to think back to the context and think what do they mean by that?

Q Okay.

MS. KAISER: Take another break here?

MR. KRIEGER: Want to take a break?

MS. KAISER: Sure.

THE WITNESS: Sure.

THE VIDEOGRAPHER: We'll go off -- I'm sorry -- we'll go off the record at 11:21 a.m.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record. This will mark the beginning of Media Unit Number 3 of the video-recorded deposition of Mark Etzel. Today's date is April 3, 2026. The time is 11:37 a.m.

BY MR. KRIEGER:

Q Dr. Etzel, could you please turn to page 28 of your declaration?

A (Witness complies.)

Q Okay. So you can see here there is reference to Figure 1 of the 860 patent. Do you see that?

A Oh, yes. Annotated Figure 1 of the 860 patent, yeah.

Q Okay.

A Yup.

Q And you can see the various process steps listed here, and I wanted to, first of all, just as a preliminary matter, would you agree that the process shown treats a cheese whey retentate as shown here?

MS. KAISER: Objection to form.

THE WITNESS: Well, what I see in this Figure 1 in box -- two down is the words "cheese whey retentate."

BY MR. KRIEGER:

Q Box 103?

A Box 103 says "Cheese whey retentate." And Box 104 says "Cheese whey retentate." And Box 105 says "Cheese whey retentate." And Box 106 says

"Cheese whey retentate."

Q Correct.

A So I read that in those Boxes 103, 104, 105, 106 the words "cheese whey retentate."

Q Okay. And so you would agree, though, that it does show a process that treats a cheese whey retentate, correct?

A Whatever cheese whey retentate they mean. I don't know what they mean, you know, by that, but I see those words there.

Q Okay. But in any event, it's not treating a cheese whey permeate. Would you agree with that?

MS. KAISER: Objection to form.

THE WITNESS: I guess the context of this we'd have to go back and look at the 860 patent to see.

MS. KAISER: You should have a copy of it.

THE WITNESS: Yeah, how they define these.

BY MR. KRIEGER:

Q Well, you reviewed the patent and your declaration in preparation for your testimony here?

A I did.
Q Can you answer that without having to reread the patent?
A That requires perfect memory.
Q I'm serious. I mean, if you need to re-read the whole patent I'm going to move on and we'll have to just leave the record as it is, but I just want to know if you can answer that based on the figure. If you can't, that's fine. I'll make the record clear. But I just wanted to get an understanding of that.

MS. KAISER: Mr. Krieger, I don't think it's fair not to let the witness look at the patent for the context of Figure 1.

MR. KRIEGER: If he's just looking --

MS. KAISER: That's what he's --

MR. KRIEGER: If it's looking, that's fine. But if he's reading it, we just don't have time for that, so --

MS. KAISER: He's opened it to Column 4. It doesn't look to me like he's planning to read it from cover to cover.

BY MR. KRIEGER:

Q Let's see. Let's see. How long do you think you need to review that in order to answer that

question?

A I have no idea.

Q Okay. Well, go ahead and take a look.

A Because I haven't done it yet.

Q Go ahead and take a look and we'll see.

A This is Figure 1 in the 860 that we're talking about. So when I look at -- can I ask you for help to locate where they refer to this Figure 1 in the 860 patent? Because it would be quicker if you're -- if you feel time-pressured it would be quicker if you helped me.

Q Well, why don't we go about this a different way, okay?

A Okay.

Q I'm going to ask the same question and I'm going to put a caveat in there because I'm not giving you time to read the whole patent.

A Yeah.

Q And I understand that. That's a limitation, okay?

A Yeah.

Q So with that understanding that you have not just reviewed the patent cover to cover --

A Right.

Q -- I'm going to ask you based exclusively on

what's shown in Figure 1, okay, isn't it fair to say that this process that is illustrated in Figure 1 does not describe treating a cheese whey permeate?

A It primarily does not refer to -- in fact, it never refers to a cheese whey permeate. It only refers to a cheese whey retentate, and its primary purpose appears to be describing what they're doing to the cheese whey retentate.

Q Okay. Let's say we're starting with an ultrafiltration cheese whey retentate. Do you understand what I mean by that?

A Yes.

Q Okay. If we were to filter that cheese whey retentate you would form another retentate, I'll call it a second retentate. Does that make sense?

A (Nodding.)

Q And you'd also form a second permeate. Do you agree with that?

A Yes.

Q Okay. Would you say that the second permeate includes, in quotes, quotes, includes the cheese whey retentate?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Does that question make sense to you?

A So what I hear you saying is if I had cheese whey and I ultrafiltered it and I made a cheese whey retentate and then I used a second membrane operation, I think you mean ultrafiltration?

Q I didn't specify. Just a second separation.

A Second membrane separation to form a second permeate and a second retentate, but the feed stream is the ultrafiltration membrane retentate?

Q Correct.

A Yeah. So you would have a second permeate of the first UF retentate and a second retentate of the first UF retentate.

Q Correct.

A That's what I think what you just said.

Q That's right.

A Okay.

Q And then the ultimate question was would you say that that second permeate, in quotes, includes the cheese whey retentate?

MS. KAISER: Objection to form.

THE WITNESS: So I think that's --

that's a -- an ill-defined question when it hits my mind.

BY MR. KRIEGER:

Q Why is that?

A Because let's say there's water and sugar in the cheese whey. We know there is. There's going to be water and sugar in both the second permeate and the second retentate, and those were also in the first UF retentate.

Q Okay.

A All right? So there's water in both because the ultrasound membrane isn't primarily separating water or lactose. Those are really little and there's some of the original waters in both streams, the UF -- the second UF retentate, the second UF permeate.

Q Okay.

A All right? So there's no on/off separation here where one stream contains only a certain molecule and the permeate contains only a certain molecule.

Q Right. I understand.

A It's not an on/off separation, and so the second UF retentate and the second UF permeate will always contain some of the molecules that

were in the first UF retentate.

Q Understood.

A Okay. All right.

Q But isn't it true also, as we discussed earlier, that generally speaking if you're doing a separation you want the overall composition of the second permeate and the second retentate to be different than the ultrafiltration retentate, correct?

MS. KAISER: Objection to form.

THE WITNESS: Yeah. So what I hear you saying is in general you want the second UF retentate to be different in composition from the second UF permeate, which would each be different than the first UF retentate.

BY MR. KRIEGER:

Q Okay. Yes.

A Right.

Q Correct. That's a correct statement, right?

A Okay. All right.

Q Is that a correct statement?

A Yeah.

Q Okay.

A Yeah.

Q So then with that understanding -- and, again,

this is a semantic question for you.

A Yeah.

Q Would you ever use the word "include" in this context, or is it nonsensical to use the word "include"? The question is would you say that the second permeate includes the -- I'm sorry. Would you say the second permeate includes the cheese whey retentate?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Or is "includes" just not a good word for that sort of separation?

MS. KAISER: Same objection.

THE WITNESS: It's like a trick question, in my mind, because you keep coming back and calling it cheese whey retentate, and I've tried to point out to you that in my mind you need to specify the unit operation. Is it the cheese whey retentate of the ultrafiltration membrane? Is it the cheese whey retentate of the microfiltration membrane?

BY MR. KRIEGER:

Q Well, we --

A And then you keep coming back with the word "cheese whey retentate" where you delete what

might be different.

Q We didn't, though, sir. We didn't. I described a situation where you're forming a first -- a first permeate, the cheese whey retentate -- excuse me -- and then I told you we filter that and formed a second permeate and a second retentate. So there's the operation.

A You did.

Q Okay. So we did say that. And so my question was in that context does it make sense to say that the second permeate includes the cheese whey retentate?

A Okay.

MS. KAISER: Objection to form.

THE WITNESS: And so I'm good with everything you said, and then at the very end you used the term "cheese whey retentate" without using the unit operation from which it came.

BY MR. KRIEGER:

Q Okay. Do you want to say includes the ultrafiltration cheese whey retentate? Would that make more sense?

A That would be very helpful.

Q Okay. So let's -- let's say it that way. Is

it nonsensical to say that the second permeate includes the ultrafiltered cheese whey retentate?

MS. KAISER: Objection to form.

THE WITNESS: There's a lot of words here. I'm just trying to make sure I understand what you're saying. Could you please repeat it?

BY MR. KRIEGER:

Q Sure. Is it nonsensical to say that the second permeate includes the ultrafiltered cheese whey retentate?

MS. KAISER: Objection to form.

THE WITNESS: Nonsensical.

Nonsensical.

BY MR. KRIEGER:

Q In other words, do you understand what that means or does it make sense?

A And so when you say -- you were talking about the -- the ultrafiltration retentate that's going into a second unit operation and forming an ultrafiltration permeate or a microfiltration permeate?

Q We didn't specify what that separation was.

A Oh, it could be any -- any membrane.

Q Sure.

A So that you have the ultrafiltration retentate from Step 1 and it flows into a second filter of some sort, ill-defined, and forms a second membrane permeate? All right. That's what I hear you saying.

Q That's what we said.

A Yup. And you're asking me whether it's nonsensical to think that the second permeate from a second membrane separation that was fed with the ultrafiltration retentate is -- is what?

Q Includes --

A Includes.

Q -- the cheese whey retentate, ultrafiltered cheese whey retentate.

A Okay. Thank you. So that helps a lot.

MS. KAISER: Objection to form.

THE WITNESS: And so that question is still ill-defined, because "includes" doesn't specify what are you referring to that's included? Is it the water? Is it the sugar?

BY MR. KRIEGER:

Q Okay.

A Is it the protein? What is it?

Q Okay. Another question. Would you say that that second permeate is formed to include the ultrafiltered cheese whey retentate? With, again, the terms "formed to include" being the focus, like that language specifically.

A And so I still think that's kind of a trick question because you're using -- you're saying "includes" and I -- you know, as a chem- -- having a chemical engineering background, when I think of these streams I think that there's certain components in the stream. Water, lactose, calcium, you know, proteins, and so "includes" may be different if you're referring to the water than it would be if you're referring to the protein or if you're referring to the lipids. And then it would also depend on which membrane.

So, for example, would you say, referring to water, that some of the water from the first UF retentate occurs in the UF -- the second membrane permeate? Yes. Some of that water does occur right there and some of it occurs in the second UF retentate. And so they both -- the water is split between the two, probably not greatly different in composition because

those membranes aren't going to separate water very well. All right? Or you could talk about lactose. You could say some of the lactose in the first UF retentate, does it occur in the second membrane permeate? Well, yeah. Some of the lactose does because those membranes don't separate lactose very well. Now, you could say what about the milk fat globule membrane --

Q Got it. Got it. I don't want to go through every composition in these streams. So we've got to stop there because I realize there are a lot of compositions. I understand your point and it's well taken. But are you -- are you effectively saying that because of all of the various components that are there and where they can end up in the various separation steps that the use of that terminology, quote, "formed to include," unquote, just is a bit ambiguous? Is that what you're saying?

A I think it requires --

MS. KAISER: Objection to form.

THE WITNESS: Sorry. It requires context and specification because, you know, some people are going to be not sure what you're saying.

BY MR. KRIEGER:

Q Okay.

A When you use that -- that language.

Q Okay. Let's turn to paragraph 76 of your declaration, please.

MS. KAISER: 76, you said?

MR. KRIEGER: Correct. Paragraph 76.

MS. KAISER: Oh, paragraph 76.

Sorry. I thought you said page.

BY MR. KRIEGER:

Q Actually, we're going to move on because of time. Let's turn to Exhibit 1,006. This is Bertelsen. I'll give it to you in a moment.

A Okay.

Q And before we go there I just want to check, are there any markings in your documents that you brought with you today?

A No.

Q Okay. Can I take a look?

A Yeah. Sure.

Q Okay. Thanks. Thank you. Okay. And I've handed you what's been previously marked as Exhibit 1,006. This is the Bertelsen document you mentioned earlier. Do you agree?

A Yup. This is it.

Q So is it fair to say that Bertelsen describes the process for making a BLG isolate powder using BLG crystallization?

A Yes.

Q What is BLG crystallization?

A BLG crystallization is the process that he discovered to make crystals of beta-lactoglobulin protein that he recovered from cheese whey.

Q Why would somebody go through the process of crystallizing BLG?

MS. KAISER: Objection to form.

THE WITNESS: Well, so the -- I'm going to try and answer that completely and accurately without making it into a shorthand version --

BY MR. KRIEGER:

Q Okay.

A -- of the description, because I know what happened here, all right? And one of the inventors here, Kasper Lauridsen, described to me what happened here. And so they discovered this. They weren't, like, thinking I want to do this. They just discovered it. They came in the next day and I'm like what's this? And

then there's crystals there and they're like, hmm, something went wrong. We should just throw it out. And then somebody else said no, what are these things? And then they discovered there were crystals, all right? And so they weren't looking for crystals. They discovered the crystals.

Q Okay.

A It was sort of an accident of the lab. And then they started thinking about these might be useful. And so you were -- you know, it's like a chicken and egg problem or did the cart come before the horse.

Q Got it.

A You know. And so they weren't looking for this. They discovered this.

Q And once they discovered it and they filed a patent application for it, what would be the commercial use of this crystallization process?

A So then all the other --

MS. KAISER: I was just going to say objection to form.

THE WITNESS: All the other follow-on patents were really like trying to define -- so I refer to this in my declaration.

BY MR. KRIEGER:

Q All right. We don't need to go there. It's fine. If you can't answer it without looking, then we'll move on.

A Oh, I can answer it without looking.

Q Go ahead.

A Okay. And so the other -- the 450 and the other ones that I've referred to are trying to find applications for the discovery that they made in Bertelsen.

Q Okay.

A And why is it -- the Bertelsen's discovery significant? Nobody was able to mass produce beta-lactoglobulin crystals before they made that discovery and why is that important? Well, because crystallization is one of the most powerful separation processes known to man. It produces -- like the crystals are very pure. So when you crystallize a protein it's very stable. It's very pure, like a diamond is just coal.

Q I remember doing these crystallizations in chemistry labs.

A Yes.

Q I know it well.

A So it's -- it's a powerful method to separate one protein from another.

Q Okay.

A And so in -- in the context of this it's actually those crystals are in a crystal lattice that only beta-lactoglobulin can fit in, and it excludes all the other proteins that -- that were in the cheese whey. And so therefore there's no glycomacropeptide, essentially; there's no alpha-lactalbumin, essentially; and so it's a powerful separation method, one of the most powerful separations known to man.

Q Okay.

A That was a significant discovery they made.

Q In paragraph 67 of your declaration you state that, quote, "Nielsen 785's production methods started with providing" -- I don't want to misquote this. Yeah. "Nielsen 785's production methods started with," quote, "providing a whey protein solution," unquote, there's a citation, "preferably by," quote, "dissolving BLG isolate powder produced," unquote, "using methods described in Bertelsen," again, unquote.

A Okay. What page is that in the declaration?

Q Paragraph 67 on page --

A Paragraph 67. I'll turn to that for a second here. Yeah. Okay. I see it.

Q So this language is saying it was produced, the powder was produced using methods described in Bertelsen, right?

A Uh-huh.

Q The BLG isolate powder from Bertelsen itself was not used in Nielsen 785, though; is that correct?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q In other words, the actual physical sample of BLG isolate powder from Bertelsen was not used in Nielsen 785, correct?

A I don't know if anybody says that, but...

Q Well, you just said it was used using the methods described in Bertelsen.

A Right, right. But I didn't actually talk about whether it's the actual bag of powder made by -- I mean, I could only speculate --

Q Okay.

A -- to answer that. You know, I mean, there's a time gap between the two patent -- patent

filings.

Q Okay. Let's go to page 57 of Bertelsen, please. So back to Bertelsen.

A Okay.

Q Going to hop back and forth. I'm sorry.

A Just give me a second.

Q Take your time.

A I'm not as fast as you are.

Q Take your time.

A So we're on Bertelsen and what page?

Q 57.

A 57. Got it. All right. I'm there.

Q If you want to read it out loud you can, but I encourage you to read it to yourself, the first paragraph of -- of this page.

A The one that starts with "Lactose-depleted UF retentate"?

Q Correct.

A Okay. I read it.

Q Okay. And this is the protocol for Example 1, which begins on the previous page, page 56.

A Yeah.

Q Isn't that correct?

A Yes.

Q And per its title, Example 1 describes, quote,

"Crystallization of beta-lactoglobulin from a crude whey protein concentrate," end quote. Correct?

A Yes.

Q And that first sentence states that "Lactose-depleted UF retentate derived from sweet whey from a standard cheese production process" --

A Yeah.

Q -- "and filtered through a 1.2 micron filter" --

A Yup.

Q -- "was used as feed for the BLG crystallization process," unquote. Do you see that?

A I do see that.

Q So based on this statement, you'd agree, wouldn't you, that the, quote, sweet whey feed, unquote, in Bertelsen was formed through two filtration steps?

MS. KAISER: Objection to form.

THE WITNESS: I have to think about that.

BY MR. KRIEGER:

Q You can think about it.

A Yeah. Because when you read this you have to realize that these people speak Danish as their native language, and they're writing this in English, and so sometimes they're not as good at English as they are at Danish. I'm not very good at Danish. Thank God they didn't write it in Danish. And so when you read this sometimes you have to realize that there's a translation that's occurring in the process of writing the English from their head, which is thinking in Danish.

Q Okay. So what's the answer?

A And so when I read this, I had to think about it many, many times to think about what are they actually saying here? Because it's obviously Danish in their mind translated to English in this sentence. And so I read this and I finally came to an understanding of what did they mean, all right? What they mean is lactose-depleted UF retentate that was derived from sweet whey from a standard cheese production process and that was filtered through a 1.2 micron filter was used as the feed for BLG crystallization process. The sweet whey feed, and what they mean by that is

the sweet whey that was 1.2 micron-filtered was conditioned on an ultrafiltration step using a Koch membrane.

Q Okay.

A That's what I think they mean.

Q That makes sense, and so, again, the question is -- based on the statement, I think you just indicated this, but I want to make sure it's clear -- you would agree that the sweet whey feed in Bertelsen was formed through two filtration steps, first ultrafiltration followed by filtration through this 1.2 micron filter?

A I think that that's not true, actually.

Q Okay. Why is that not true?

A All right. So you've ever been to a cheese whey manufacturing plant, like in Wisconsin they have a lot of them, you -- you take the milk, you add the rennet, the curd is formed, and then you drain the vat and the curd goes on to the cheesemaking guys.

Q Okay.

A And the whey gets drained off and they don't want to feed that into their membrane process because it'll plug because cheese whey contains

what's called cheese fines, and the cheese fines are like little particles of the curd that just get drained off and they'll plug the equipment. And so the first thing they do is they -- they use a cheese -- they remove the cheese fines using a filter. It's a coarse filter. It's like just trying to remove sand from water kind of filter. All right? And -- and they do that to protect the -- the UF process, which is downstream.

Q That makes sense.

A All right. So -- so you have to -- if you don't do that you'll plug the equipment. And so what you want to do is -- is take the cheese fines out using a filter, and they used a 1.2 micron filter in this case.

Q Are you saying that 1.2 filter, micron filter, was the coarse filter?

A That would be the coarse filter to remove the cheese fines. It's my interpretation of this language. And then if you make coffee at home, all right, it's similar to that. So you don't want to drink the coffee fines. So they have a paper filter and it captures the coffee fines.

Q Right.

A And then the coffee flows out the filter. There's really no retentate.

Q So are you saying, then, that the 1.2 micron filtration step occurs before the ultrafiltration step?

A Yeah. That's what I believe.

Q Okay.

A It's -- it's -- and I think -- and when I first read it I didn't catch that, but it didn't make sense to me, why are they using a 1.2 micron filter here? And it's to remove cheese fines, I believe, and I think it's just a matter of the Danish to English.

Q When you first read it, how did you interpret it?

A I was confused. Just didn't make sense to me. So I'm not even sure -- it was just sort of like, hmm, that's confusing.

Q I had to read it several times too.

A Yeah. You know, they mention sweet whey and then they mention sweet whey was conditioned and they used the Koch membrane. I'm like, oh, that's an ultrafiltration membrane. But then I looked up in front, I'm like what's -- wait a minute. Lactose-depleted UF retentate. That's

after the ultrafiltration. But then why would you filter that with a 1.2 -- I was just so confused. And then I realized, oh, it's a Danish to English problem.

Q The problem I have with that interpretation --

A Uh-huh.

Q -- just semantically is the subject of this sentence is lactose-depleted UF retentate, would you agree?

A Right. Yeah.

Q And the verb "filtered," it says that that UF retentate was filtered. That's the logical English language order of things, wouldn't you agree?

MS. KAISER: Objection to form.

THE WITNESS: I disagree. All right. Because you -- and the answer could be by inserting commas into this sentence.

BY MR. KRIEGER:

Q But reading it as it is you can't -- without modifying the language that's in the patent document, okay, the language as printed in Bertelsen using standard English interpretation and sentence structure, wouldn't you agree that the word "filtered" is modifying what's

happening to the UF retentate?

MS. KAISER: Objection to form.

THE WITNESS: I would not, no, knowing what I know.

BY MR. KRIEGER:

Q **Knowing your knowledge of -- but if you didn't know the Danish origins and you didn't have that sort of background, is that how you'd still interpret it?**

A So I would look at this as a POSITA and as my own just individual background. I would look at this and say, boy, this is confusing. I don't really understand what they're saying here. And then I would say, wait a minute, the lactose-depleted UF retentate is formed later. But they're mentioning that first. But then they say that it's from -- and then it was filtered. And then it was used as the feed. But then they say the sweet whey feed was conditioned on an ultrafiltration membrane. And I'm like, okay, something isn't consistent here. They must mean something different. And I think, okay, what if they didn't start out with this lactose-depleted UF retentate and they said sweet whey from a standard cheese

production process was filtered through a 1.2 micron filter. And that's going to be used later in the -- in the BLG crystallization process and sweet whey was conditioned on an ultrafiltration membrane, and then it made sense to me.

Q So what I'm confused about is we spent a lot of time a moment ago talking about Ozturk.

A Uh-huh.

Q And Ozturk talks about a UF separation process --

A Yeah.

Q -- followed by an MF separation process, correct?

A Yeah. Yeah.

Q Isn't that the same as how I was interpreting this provision?

A No. Totally not.

Q Why -- it's an ultrafiltration followed by a microfiltration. Why is that different?

A Well, I mean, it's a 1.2 micron filter.

Q It's just much bigger.

A More than ten times bigger.

Q So an order of magnitude?

A Yeah. Yeah. I mean, if you think that I'm

going to go out and get a hamburger tonight for $10 and they come back and tell you it's going to be $120, you'd notice.

Q So an order of magnitude different?

A It's a big difference.

Q That means a lot?

A That's a lot to me.

Q And it could mean a big change in terms of processing? Is that your testimony?

A It's totally day-and-night different.

Q Okay.

A They might have the word "micron" in there, but they are like different animals.

Q Got it. Okay. And because of the size of the pores of that microfiltration step, isn't it fair to say that that microfiltration step that we just discussed in Bertelsen wouldn't reduce GMP content, would it?

A 1.2 micron it remains cheese fines.

Q Okay. So that's a "no"?

A Yeah. Or yes, I agree that's a "no."

Q Okay. Thank you. The next sentences down below talk about conditioning the ultrafiltration setup. Do you -- let me find -- here we go. The second sentence, "The

sweet whey feed was conditioned on an ultrafiltration setup." Do you understand what the term "conditioned" means there?

A Yeah. I think I do. Yes.

Q What does that mean?

A What they're talking about is the diafiltration step, and so they're taking the UF retentate that they got from the Koch membrane HFK 328 and they're doing a diafiltration using water that they made by reverse osmosis.

Q So that's a third filtration step; is that right?

A Yes. It's --

MS. KAISER: If you could just pause, it would be objection to form. Thanks.

THE WITNESS: And so what they're doing here is -- by this description is the sweet whey feed was conditioned on an ultrafiltration setup, da, da, da, da, da, using a 21 percent total solids and polished water and they're using that as a diafiltration membrane. So the way that usually happens is you've got this one membrane system here, the Koch membrane, call it, ultrafiltration system. You concentrate the whey, and then after it's

concentrated you add water and dilute it back and concentrate it again. You may even do that again and concentrate it again. But it's still the one ultrafiltration membrane unit operation that you're doing this with. So why do they do that? To wash out this lactose and other things from this -- the retentate.

BY MR. KRIEGER:

Q Okay. I'm going to back up a second because I started out this line of questioning asking you if the -- what was the sweet whey feed that they're referring to here.

A Yeah.

Q Okay. And I thought it was from -- just from my reading of it -- from the microfiltration step 1.2 microns. You're saying no, that's not the case. Microfiltration is first followed by ultrafiltration. Is it your view, then, that that retentate from the ultrafiltration step is, in fact, the -- the feed, the sweet whey feed that they're referring to in Bertelsen? I can elaborate on this a little bit. So the second sentence begins with "The sweet whey feed was" --

A Yeah.

Q -- "conditioned," so that's the term they're using, "sweet whey feed," and I'm trying to figure out what that is. It sounds like from your prior discussion you're interpreting sweet whey feed to be the ultrafiltration retentate. Is that correct?

A No.

Q What is it?

A The sweet whey feed, I believe, has been -- the cheese fines have been removed using the 1.2 micron membrane, and the sweet whey feed was fed to the ultrafiltration membrane process.

Q Okay. So you're saying it is the output of that first microfiltration step that is the sweet whey feed. Is that what you're saying?

A It's -- it's the -- this -- the sweet whey feed to the ultrafiltration membrane process has been filtered through a 1.2 micron filter.

Q So that's a "yes"?

A That's how I read this.

Q I mean, you're agreeing with me, correct? I just want to make sure it's clear.

A We're using different words, and sometimes I have trouble understanding what you're saying.

Q I'll ask it again and if it's ambiguous or

whatever let me know, okay?

A Okay.

Q But I'm understanding -- let me ask it a different way. Is it your understanding that the output of the 1.2 microfiltration step is the sweet whey feed or the retentate from the ultrafiltration process?

MS. KAISER: Objection to form.

THE WITNESS: Could I -- could I rephrase that?

BY MR. KRIEGER:

Q By all means.

A Because you use the word "output," and I'm like okay, I don't know what "output" means.

Q Okay. So okay. I will say --

A And so I would say like let -- in my -- what would help me understand what you're saying is that cheese whey from a standard cheese production process that has cheese fines in it is filtered using a 1.2 micron filter, that the filtered cheese fines free --

Q Permeate?

A Permeate in some ways, yeah, from the 1.2 micron filter is the feed --

Q Okay.

A -- to the UF membrane process.

Q Thank you.

A And they're going to condition.

Q This may seem like a silly question, but it wasn't the microfiltration retentate that was sent to a conditioning step, right?

A It's like no retentate. I mean -- I mean, like when you make coffee you wouldn't call the coffee grounds a retentate.

Q So that's a "no"?

A And so I just think that not all filtration results in a retentate.

Q But you're separating something, right?

A I mean -- I mean, you could call it a retentate. But you don't call the coffee grounds that are left on top of the paper filter in your coffee maker a retentate.

Q What would you call them?

A Trash.

Q Okay.

A You know. Compost.

Q So would you take the microfiltrate trash and send it to a conditioning step again?

A So what they actually do with it, the microfiltration -- the material retained by the

microfiltration step, they -- they put that back in -- with the cheese, actually, and so they make cheese with it.

Q So it's not trash?

A It's not trash. It's -- it's -- they throw that back into -- with the curds and make cheese out of it. So when you buy cheddar cheese and eat it, it's partly made from the curd and the cheese fines.

Q Okay.

MS. KAISER: And now we have our cheese fact for the day.

THE WITNESS: Yeah. You're in Wisconsin.

MR. KRIEGER: It's a little early, but I think we can probably end there if you're okay.

MS. KAISER: Okay.

MR. KRIEGER: A good stopping point --

MS. KAISER: Yeah.

MR. KRIEGER: -- for lunch.

THE VIDEOGRAPHER: Okay. We will go off the record at 12:21 p.m.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record. This will mark the beginning of Media Unit Number 4 of the video-recorded deposition of Mark Etzel. Today's date is April 3, 2026 and the time is 1:22 p.m.

BY MR. KRIEGER:

Q Dr. Etzel, let's take a moment and go back to page 57 of Bertelsen.

A Yeah.

Q This is the page we were discussing earlier.

A Okay.

Q And if you could read to yourself again the second and third paragraphs of this page.

A That's "The concentrated retentate" and -- is the first three words of the --

Q Correct.

A Okay.

Q Okay. So from this description in Bertelsen, isn't it correct to say that the lactose-depleted ultrafiltered retentate was seeded with BLG crystal starter, cooled, and centrifuged to separate the BLG crystals?

MS. KAISER: Objection to form.

THE WITNESS: Could you repeat that, please? It's a long sentence.

BY MR. KRIEGER:

Q There's a lot of steps there, so I'll take them one at a time. Okay. Is it fair to say that the lactose-depleted ultrafiltered retentate was seeded with BLG crystal starter?

A Yes.

Q And then it was cooled?

A You're skipping that transferred step.

Q Okay. What's the transfer step?

A It says the concentrated retentate was transferred to a thread [sic] earlier crystallization tank.

Q Okay.

A And so -- so you're skipping that step when you form that sentence that you proposed to me, and so -- I mean, I'm not disagreeing with you. I'm just saying you're skipping that step.

Q So after it's transferred it's cooled; is that fair to say?

A Yes.

Q And then it's centrifuged to separate the BLG crystals; is that right?

A So again you're skipping the sentence says where it talks about the next morning and the rapidly sedimenting crystals, alleged sample,

blah, blah, blah, was cooled down to zero degrees C in an ice water bath, and then you're skipping all of that and you're saying the mother liquor and the crystals were separated by centrifugation.

Q Correct. I'm summarizing, to be fair.

A Yeah.

Q To be fair, but do you agree with that as a general summary of that description with those caveats?

A It seem -- yeah. It seems accurate, yeah.

Q Okay. So the BLG crystals are removed from the ultrafiltration retentate, correct?

MS. KAISER: Objection to form.

THE WITNESS: Well, I would say that they seeded it with BLG seed crystals. They let crystallization occur. Then they transferred it to this big tank, cooled it to 4 degrees C, and then they let it sit overnight with general stirring to let the crystals grow. And then they took these samples and then the mother liquor and the crystals were separated by centrifugation. So now you've got the solid crystals separated from the liquid. What is the liquid? Well, the liquid is that

lactose-depleted UF retentate mother liquor that doesn't contain as much beta-lactoglobulin anymore because it was deposited on the crystal. That's the way I read this.

BY MR. KRIEGER:

Q Correct. And I -- I understand that description, and is that different than saying that BLG was reduced when the crystals were removed from the UF retentate?

MS. KAISER: Objection to form.

THE WITNESS: So the BLG was reduced from what?

BY MR. KRIEGER:

Q From the UF retentate by being separated from it.

A So once -- once you have the BL -- the UF retentate that is BLG-reduced and is separated from the crystals, that's called the mother liquor.

Q So it's no longer the UF retentate?

A Well, yes, it's referred to as the mother liquor, which was formed from the UF retentate.

Q Let's look at your declaration, please, and turn to paragraph 85.

A Okay.

MS. KAISER: Paragraph 85.

MR. KRIEGER: Correct.

MS. KAISER: Sorry.

BY MR. KRIEGER:

Q No, that's okay.

THE WITNESS: Page 40.

MS. KAISER: Okay.

BY MR. KRIEGER:

Q You can see a chart here at the top of page 40, paragraph 85. Do you know what's shown in this chart?

A This is Feed 2 in the Bertelsen process.

Q And then on the next page you can see two more charts. I'm on page 41.

A Okay yup.

Q And this chart -- these two charts -- excuse me -- compare two tables from Bertelsen, Table 3 on the top and Table 12 on the bottom. Is that right?

A Yeah. Table 3 on the top is the concentration of selected components in Feed 2. And Table 12 on the bottom is the concentration of select components in the spray-dried BLG crystal preparation. Yup. That's what I see that is.

Q Okay. And is the bottom chart here from

Example 7 -- it says BLG isolate powder. Do you see that?

A Let me see where you see that. I see Table 12 is the BLG crystal preparation.

Q Underneath it. Sorry. It's written in --

A Oh, yes. Spray-dried BLG crystal powder.

Q And then underneath it it says, "BLG isolate powder." Do you see that? All the way down. All the way down.

A Oh, yeah. In the red -- in the Example 7, BLG isolate powder.

Q Correct.

A Yeah. Right.

Q Did you edit this chart?

A Well, there is highlights on it.

Q Did you make those highlights?

A We made those together when we prepared the declaration and discussed this as a group.

Q Okay.

A Yeah.

Q So "we" being you and your attorneys made this together?

A Yes.

Q Okay.

A Right.

Q Okay. Now, Table 3 is titled "The Concentration of Selected Components of Feed 2."

A Uh-huh.

Q Is feed -- Feed 2 is the sweet whey feed, is that right, that we discussed earlier?

A Okay. I have to go back.

MS. KAISER: Excuse me.

THE WITNESS: Oh, that's in Bertelsen. I'm looking through Bertelsen now, trying to find the words "Feed 2." I think it's in one of the examples, maybe. Okay. Just a second. This is -- Example 3 and Example 7. It must be in there. Okay. Here we go. So I see on page 60 in Example 3 that no seeding was used in the experiment performed with Feed 2. Feed 1 and 2 were based on sweet whey and had been fat-reduced using a Synder FR membrane prior to treatment as described in Example 1. Feed 3 was from acid whey.

BY MR. KRIEGER:

Q So it says there that Feed 1 and 2 were fat-reduced by a Snyder [sic] FR membrane. What is that?

A Synder. Synder.

Q Synder. What is a Synder FR membrane?

A Yeah. I'm looking for what that is. That's a good question. It doesn't say, does it? Synder FR membrane. I'd have to google it.

Q Okay.

A I know the Synder membrane company well, but I don't know what the FR membrane is.

Q Got it. Okay.

A You know, fat-reduced, I would imagine it's a microfiltration or a very open pore ultrafiltration membrane, but I'm just speculating.

Q And this sweet whey Feed 2 that we just talked about, that's -- is that permeate or retentate or neither?

MS. KAISER: Objection to form.

THE WITNESS: This is -- is -- you know, it's like in the silence of my own mind given enough time I could probably figure this out, but under pressure of people watching me it might be harder. It says here on page 60 that Feed 1 and 2 were based on sweet whey and had been fat-reduced. The 3 feeds can be seen below in Table 2, 3, and 4.

BY MR. KRIEGER:

Q So the fat-reduced BF Snyder [sic] FR membrane implies that they're passing this sweet whey through this membrane, correct?

A That's -- that's -- because it doesn't really say that, does it? I'm -- so I have to speculate as to what that -- what they actually did.

Q Well, it said it's fat-reduced.

A Yeah.

Q What does fat-reduced mean?

A It means the fat content was reduced or lowered.

Q And it has a membrane, so presumably the fat was reduced through the membrane?

A I would think so, but I'd have to speculate.

Q How else --

A Because it doesn't --

Q -- could you interpret that sentence? I mean seriously, like I'm just trying to understand. Like I -- that seems pretty clear to me. I was just curious why that's not -- why you don't necessarily reach that same conclusion.

A Yeah.

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Do you have an alternative interpretation of that sentence?

A No. No. I just think, you know, they didn't say what a Synder FR membrane is, so, you know, I'm just not sure exactly what that step entailed because they didn't spell it out.

Q So from this you can't tell if it's a permeate or a retentate? Is that what you're saying?

A They don't even say, do they? I mean, I can speculate what I think it probably was, but I can't --

Q With that caveat, what would be your speculation on that?

MS. KAISER: Objection to form.

THE WITNESS: I'd have to look at this in more detail and carefully read through it.

BY MR. KRIEGER:

Q Okay. So you can't answer without reading the whole --

A I can't really answer it without really looking at what they said.

Q Okay.

A Because sometimes you'll find later in the document that they mention what a Synder FR

membrane is and, oh, that's what they meant back on that pages 10 before this, you know.

Q Does the fact that they're reducing fat give you any insight into what this -- this Synder FR membrane is or does?

A Well, I would say then, you know, so the Synder FR membrane was used to reduce the fat, I would --

Q That's how I read it.

A -- presume. And exactly how they don't spell out, and exactly what they used to do that isn't spelled out. And I'd have to look through and do they mention Synder FR membrane later on? Maybe then they say where -- what kind it is and what they got.

Q Is it fair to say that the fat that they're referring to here you generally expect to be larger in size than the proteins in the sweet whey?

MS. KAISER: Objection.

THE WITNESS: Larger in size -- that the fat would be larger in size than the --

BY MR. KRIEGER:

Q Sweet whey proteins.

A Sweet whey proteins. Yes.

Q And does that suggest that, in fact, this membrane that they're talking about, whatever it is, is rejecting the larger fat particles and allowing the smaller sweet whey proteins to pass through as a permeate?

A I would say that what it means is that the Synder FR membrane is a filtration membrane, I suspect, and filtration is a size-based separation, and so if they're going to remove the fat based on size then smaller molecules would go through preferentially, but, you know, like with any membrane separation it's not on/off. It's not like 100 percent of the fat's removed. It's not like 100 percent of the whey proteins are permeated. It's -- it's not like that. It's not on/off separation. It's a partial separation, and so you have to be careful when you use those terms because there's all -- there's almost no on/off separations. Everything is -- is a matter of degree.

Q Right. And I understand and appreciate your explanation about how the membrane you'd expect it to work with the smaller particles passing through.

A Yeah.

Q And with that clarification in mind does that suggest to you, subject to your full review of the patent, that this sentence is indicating that the sweet whey feed is a permeate?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q That goes through that membrane.

A I would say that they're starting out with what they call as a UF retentate back in the beginning here with Example 1, lactose-depleted UF retentate, and then they do some diafiltration to try and remove some sugar and salts and things like that from it, and they're using that as the feed stream for the crystallization process. So when we get to this one that you're talking about, which is Example 7, or before that, oh, where do they mention the Synder FR? Oh, here we are on page 60. Then they say using the same experimental and analytical setup as in Example 1 --

Q Right.

A -- which is where they did the -- they took the UF retentate and diafiltered it to get rid of the sugar and then they concentrated it and

things like that. So we carry that forward to Example 3 on page 60 and then they say the same experimental setup as in Example 1, three different times of whey protein containing raw material were tested as feeds. So now all of a sudden it's like -- it's the same setup but not the same liquid, all right; however, no seeding was used in the experiment. Feed 1 and 2 were based on sweet whey and had been fat-reduced with a Synder FR membrane prior to treatment as described in Example 1. And so I would then, from reading this, I would say, well, Feed 1 and 2 were a sweet whey that had been fat-reduced using a Synder FR membrane and then processed according to Example 1. And so that is after they did the UF membrane that you get the UF retentate. But the Synder FR membrane was performed, perhaps, on the sweet whey itself, perhaps as an alternative to the 1.2 micron filtration, to remove cheese fines. That's how I would read this.

Q Understood. Understood. And then in that case if this is analogous to the 1.2 micron filter that we talked about a moment ago --

A Uh-huh.

Q -- you would expect, then, I mean, the majority of these sweet whey proteins to pass through as a permeate before they are subsequently treated as described in Example 1, correct?

A Yeah, so I would say that -- if you mean by describing example -- as they did the UF membrane --

Q Correct.

A -- and made the UF retentate.

Q Correct.

A And so I think that from reading this I think they removed the fat using this Synder FR membrane and then made a UF retentate that's diafiltered to remove some of the lactose and now they call that -- and then Feed 1 -- 1 and 2 were based on sweet whey and had been fat-reduced using this membrane, and then Feed 3 is acid whey and that's like a whole different category.

Q Correct. But then the Feed 2 after the fat reduction, it's the permeate that goes to the subsequent processing, correct?

MS. KAISER: Objection to form.

THE WITNESS: It doesn't really say that in this page 60 yet.

BY MR. KRIEGER:

Q It doesn't say that, but you --

A Yeah.

Q -- can't envision a situation, can you, where the whey, sweet whey proteins would go as a retentate to the subsequent processing steps because they said they're removing the fat and you already testified that the fat is larger in size than the sweet whey protein, so isn't it kind of illogical to suggest the opposite?

A If you take this literally, all right, which is what we're doing, all they really say here is that the fat -- the whey was fat-reduced using a Synder FR membrane for Feed 1 and 2. And then they say prior to treatment as described in Example 1, which Example 1 had both the fat-removal steps -- or they had the 1.2 micron, which is like cheese fines, and so I would have to speculate that what they mean is that Feed 1 and 2 were based on sweet whey, no problem, that had been fat-reduced using a Synder FR membrane, no problem, prior to treatment as described in Example 1, and what did they do in Example 1? Well, they used a UF membrane to make a UF retentate that was

diafiltered and dialyzed.

Q Okay.

A That's how I would describe it.

Q Okay.

A You know, and I'm basically unpacking this paragraph.

Q Understood. Understood. So you can't provide an opinion one way or the other as to whether it's the permeate from this Synder FR membrane that is sent to the treatment described in Example 1 --

A They don't say.

Q And you can't -- and as an expert in the field --

A Uh-huh.

Q -- looking at this you can't discern what they mean by that? Is that your testimony?

MS. KAISER: Objection to form.

THE WITNESS: Well, I would say that "you can't" means I cannot.

BY MR. KRIEGER:

Q Yeah.

A I cannot.

Q You have no opinion on this?

A Yeah. And so I can have an opinion on it.

Q What's your opinion?

A And that's different than I can say absolutely with certainty what they did.

Q Understood. So --

A So I have to read between the lines of what they wrote here, and what I would say is that probably what they mean here is that they took the sweet whey that they're describing in Example 1 and they passed it through a Synder FR membrane to reduce the fat content, probably also reduces the cheese fines content, and then they probably put that through the UF membrane to make a UF retentate that's lactose-reduced and diafiltered, and then they call that Feed 1 and 2, and somehow Feed 1 and 2 are different. And let me look at the composition of Feed 1 and 2. Is that what's in the -- that's in my declaration. Feed 2 is the -- it looks to be a UF retentate. Feed 3 -- oh, they don't mention that. Then it jumps to Example 7. So, yeah, I wonder what the difference between Feed 1 and Feed 2 are. The table -- the composition of the three feeds can be seen below in Table 2, 3, and 4. So if I look at those I can kind of tell you what they probably were.

Q Okay.

A Do you mind?

Q I'm sorry. What? What was your --

A If I look at Table 2, 3 and 4 it tells you what Feed 1, 2, and 3 have in composition and from that, as that person skilled in the art, I can give you a good guess --

Q Okay. Go ahead.

A -- as to what those probably are.

Q By all means. Thank you.

A Okay. It says Table 2, Feed 1, whey protein concentrate based on sweet whey. And that would be the -- likely the UF retentate from that whole process, the Synder FR membrane followed by the UF with diafiltration, and then they have concentrated this up so that it's -- it's got these concentrations of ALA, BLG, and GMP. You can see the GMP content's pretty high, which means that it's just concentrated whey that's been diafiltered and so on, fat-reduced with a Synder FR membrane. Table 3, which is Feed 2, is ALA-reduced whey protein concentrate. And so ALA content's not that different. It is -- it is lower. It's half as high. CMP is lower. But the BLG is higher.

So somehow I am not sure how they made the Feed 2.

Q Okay.

A They must have done something that changes the protein ratios. And then Feed 3, this is for acid whey, and we're not talking about that.

Q Okay. Thank you for that. Let's look again at the bottom chart from your declaration on page 41.

A Okay.

Q This chart shows the concentration of certain components of the BLG isolate powder, correct?

A Yes. Yes.

Q And isn't it correct that of the two compositions shown on page 41 of your declaration, Tables 3 and Table 12 --

A Yes.

Q -- that the BLG isolate powder is the composition with reduced GMP?

A Yeah. So it's a good point that you're making. And, actually, this helps us understand what they mean because if you look at -- on page 41, Example 3 they have the CMP content as 17.1. And if you look at page 62 of Bertelsen, the table at the top, the CMP concentration is

17.1. And on the previous page it's -- the BLG is 70 and then 12.2. So this Feed 2 is the same as what Bertelsen has back here on Table 3. And that's the -- that is the same table, the same data, the same fluid. And then the bottom table from Example 7, the BLG isolate powder, is after they did the crystallization process. That's what I would say. Sometimes these patent example -- examples are hard to read because they're not written like scientific publications.

Q Okay. So that's an excellent explanation, but I don't think it really answers the question that I presented, which was --

A Oh, no. Okay.

Q -- in view of what you just explained, isn't it fair to conclude that the BLG isolate powder is the composition with reduced GMP?

A Do you mean "is the" or "is a"?

Q "A" is fine and -- whichever you choose.

A Yeah. Okay. I would say I agree.

Q Okay. And how -- how is that powder formed? Through spray drying?

A Well, the most important step is actually said in that Table 2 legend, their title, which is

BLG.

Q I'm sorry. Table 2 where?

A On my page 41 of my declaration.

Q Okay.

A And in the -- it says Table 12, the concentration of selected components in the spray-dried BLG crystal preparation. All right. The most important part of that is that they've crystallized out the BLG. That's why you see a difference. If you spray dried the liquid that was in Table 3 it would have the same composition as -- as it does down below. So it's not the spray drying part -- spray drying removes water. All right. The solids are left behind. So solids content wouldn't change. And so what they're doing is spray drying it and then they're giving it on a dry solids basis, and so why is the composition different? It's because they crystallized out the BLG. It's not the spray drying.

Q Got it. No, that makes sense.

Let's now turn to Exhibit 1,007.

MS. KAISER: We don't have that yet, right?

THE WITNESS: Okay.

MS. KAISER: Okay.

BY MR. KRIEGER:

Q I'm handing you what's been marked as Exhibit 1,007. This is what we've been referring to as Nielsen 450.

A Okay.

Q Okay. You, of course, recognize this document, correct?

A Do I.

Q And you reviewed it for your deposition?

A Yes, I did.

Q So is it fair to say that this reference, Nielsen 450, it describes a process for making denatured beverages using the BLG isolate powder described in -- in Bertelsen?

A Yes.

Q Okay. And Nielsen 785, that's a different exhibit, Exhibit 1,005. Do you have that one?

A We haven't seen that one yet, right.

Q Yeah. Let's go ahead and give him that one too. So I'm handing you Exhibit 1,005, which is Nielsen 785.

A Okay.

MS. KAISER: Did you bring these all on a plane?

MS. SAIA: Yeah.

THE WITNESS: Okay.

BY MR. KRIEGER:

Q Okay. So you're familiar with this Exhibit 1,005 as well, correct?

A Yes. I am.

Q It also used a BLG isolate powder from Bertelsen; is that correct?

A You're referring to 785?

Q Correct.

A I'm trying to look for whether they used the words "BLG isolate powder" --

Q Okay.

A -- in 785.

Q Your declaration talks about this quite at length. Feel free to look at that as well, but --

MS. KAISER: Could I give him a spot? Page 32, paragraph 68, if that helps.

THE WITNESS: That speeds things up.

MS. KAISER: If you don't want me to do that, I won't.

MR. KRIEGER: Yes and no.

THE WITNESS: Okay. I see it there on paragraph 68, disclosures related to

Bertelsen's BLG isolate powder, Nielsen incorporated Bertelsen, but did Nielsen refer to that crystal in BLG as BLG isolate? That's what was my question.

BY MR. KRIEGER:

Q Well, irrespective of whether they use that actual term, I mean, is it fair to say that that is what they're talking about in terms of their starting material for both of those, Nielsen 450 and Nielsen 785?

A I think what they are really referring to is the BLG crystals, the BLG crystal powder.

Q Fair enough. Okay. Very good. And Nielsen 450 describes the use of these powders in making beverages; is that correct?

A Yes.

Q And Nielsen 785 describes the use of these powders in nanogels, correct?

A Well, I would say nanogels for beverages.

Q Okay.

A They both are working on beverages.

Q Okay.

A They're both using BLG crystals in different beverage formulations. Why? To find applications for the major discovery of

Bertelsen that we can now make for the first time in the history of the world BLG crystals in mass production.

Q Got it. Okay. Let's look again at Nielsen 450, Exhibit 1,007. And if you could turn to page 109.

A Okay.

Q It's a big document.

A Yeah. So I just wanted to comment on this --

Q Sure.

A -- if you don't mind. You said this is a big document, but this is also a big document and this is also a big document and this declaration --

Q And your declaration --

A -- is also a big document. There's a thousand pages here, and when you ask me to recall do you remember this, there's a thousand pages here, and maybe when I was your age I could do that, but I can't do that now.

Q Well, it's not a memory game, so if you need to review, you can feel free to review.

A Okay. But a few times you said to me, well, could you just say without reviewing or without looking at it and I'm like, okay, he said it's

okay if I look at and then he says it's not okay if I look at it.

Q Understood. Just want to make sure it's clear when you need to look at it and clear when you feel comfortable answering --

A So even if you object then I can go ahead and still look at it?

Q We'll have -- let's cross that bridge when we get there.

A All right.

Q Let's just --

A Okay. So what's your question now?

Q Let's turn to page 109 and look at Example 11.

A Okay.

Q Okay. Did you review an example in preparation for your declaration? Do you recall?

A Just finding it. Yes.

Q All right. And Example 12 as well follows this example. Take a look at that, please.

A Yes.

Q Okay. And you reviewed this one as well, correct?

A Yes, I did.

Q Okay. What is -- can you explain to me at a high level, what are -- what is the difference

between Example 11 and Example 12?

A One has lipid. The other does not.

Q Okay. What are lipids?

A It's like fat or oil.

Q Okay. And why are they relevant to your testimony?

A Because the lipids, as an oil -- in this case they used canola oil -- will rise to the top and float if it's not homogenized and when you put the lipid in there, there might be questions as to what -- how much denaturation was there and did the lipids present change the amount of denaturation. And so the cynical sceptic might say, yeah, you've shown that you've got better than 50 percent denaturation, but you never showed that when there was lipids present. And one of the claims has lipids in it from Leprino, and so now I'm looking for the -- the attack on my logic by saying, yeah, you showed it with no lipids, but what about with lipids? So that's why it's relevant.

Q Okay. Let's turn now -- keeping those nearby -- let's turn now back to your declaration.

A Uh-huh.

Q And turn to paragraph 137. It's on page 68.

A 137, yup, I'm there.

Q And you state there at the top of this paragraph, quote, "Nielsen 450 taught that BLG powder was preferably prepared using Bertelsen's methods," end quote.

Do you see that?

A Yeah.

Q Do you agree with that statement as you sit here today?

A I would say yes, because Bertelsen was finding you may crystallize BLG, and so they're trying to find applications for that, and so Nielsen 450 and is it Nielsen 785 is also the other one?

Q Yes, 785.

A Yup. They're looking for applications of the Bertelsen -- Bertelsen discovery.

Q When you say "preferably," so what does "preferably" mean to you?

A They might do examples where they show that if you don't crystallize it, it doesn't work as well, but primarily what they're looking at is when they say BLG isolate powder that they make or BLG powder that they make, they're talking

about crystals of BLG.

Q Okay. Let's go back to Nielsen 450, Exhibit 1,007, and go to page 62, please.

A Okay.

Q Okay. And then read that first paragraph again. To yourself is fine.

A Yeah. Got it.

Q Okay. So this section here that you just read at the top of page 62 --

A Uh-huh.

Q -- refers to other publications for forming BLG-enriched compositions. Do you agree?

A I agree.

Q These other references are not Bertelsen, correct?

A I agree.

Q So is it fair to say that -- that Nielsen 450 refers to several different methods for making BLG-enriched compositions?

MS. KAISER: Objection to form.

THE WITNESS: I would not say that.

BY MR. KRIEGER:

Q Why not?

A Because they're not describing how these are made. They're just saying that I looked in the

literature and there's other ways that other people have prepared BLG-enriched compositions. They're not describing that other ways to make BLG crystals.

Q I didn't say "crystals."

A Yeah.

Q I said "BLG-enriched."

A And then I'm describing how to make ultrapure BLG like Bertelsen does. They're just saying there's other ways to make BLG-enriched compositions. What's a BLG-enriched composition? Well, we know what the composition of cheese whey is and it's that plus a smidgeon. That's enriched.

Q Right.

A It's a very broad term.

Q Understanding that. What you said earlier in your declaration was that the BLG powder was preferably prepared using Bertelsen's methods. Isn't it fair to say that these other methods that are disclosed in -- in Nielsen 450 are also methods that you could use to make BLG-enriched compositions for use in their -- their alleged invention in the 450 patent?

A I disagree with that statement.

Q So did you review these references?

A I did.

Q Okay. And is there a reason why somebody skilled in the art would not use any of the methods in these other references in preparing a BLG-enriched composition for use in the processes described in Nielsen 450?

A Yeah, so ---

(Reporter clarification.)

BY MR. KRIEGER:

Q Is there a reason why somebody skilled in the art would not use any of the methods described at the top of page 62 of Nielsen 450 in the alleged inventions that are described within Nielsen 450?

A Okay. Would not?

Q Correct.

A Yeah. Yeah. Yes.

Q What are those reasons?

A They wouldn't work as well.

Q But would they work at all?

A I'm not even sure they would work at all, but I didn't do it. They didn't do it.

Q Why are you so -- it's interesting that you're conclusively indicating they wouldn't work as

well.

A Because --

Q Hold on. I haven't --

A Go ahead.

Q I have a question.

A Yeah.

Q The question is why -- how can you be so conclusive that the methods here wouldn't work as well? Did you test them?

A I didn't have to test them.

Q Okay. What was it about these methods that told you they wouldn't work as well?

A Neither one of them involve crystallization of BLG.

Q Okay.

A Crystallization is a far superior separation process than any of the processes mentioned in these two papers.

Q What are the methods described in these papers?

A I'd have to review these two publications quickly to --

Q Well, you just offered your opinion that the crystallization is far superior to these methods --

A Yes.

Q -- described here?

A Yes.

Q So what's that based on?

A I read these references.

Q Okay.

A I can't by -- from memory quote these references to you, but I know that neither one of these used BLG crystallization to make their enriched BLG compositions.

Q Okay. Understand.

A One of them used chromatography. The other one I'm trying to remember what they used. Maybe it was a series of membrane separations. No. Affinity. Okay. So one of them used, I believe, chromatography and the other one used this -- as I recollect, the immobilized Retinol A on an absorption column to bind beta-lactoglobulin by affinity separation and then they eluted it, and that's how it is. Neither one of those were to make crystalline BLG. Neither one of them are going to make as pure a crystal, a purer product of BLG. Neither one of them are going to totally eliminate the other proteins as much as the BLG crystallization process. Neither one of them

would work as well as what Bertelsen's crystals did.

Q Okay. But you never tested them or compared them to --

A I don't have to test them.

Q It's just based on your knowledge?

A It's -- it would be obvious from somebody skilled in the art.

Q Okay. Let's turn to page 61, please, of, again, Nielsen 450, the previous page.

A Yup.

Q And then we're going to look at the final paragraph here.

A Okay.

Q It states, quote, "In some embodiments of the invention the preparation of the BLG-enriched composition includes or even consists of high-salt BLG crystallization in the pH range 3.6 to 4.1 according to U.S. 2,790,790" --

THE REPORTER: I'm sorry. Can you slow down a bit?

THE WITNESS: That would help me too, if you don't mind, please.

BY MR. KRIEGER:

Q You can just read that to yourself, though.

Last paragraph.

A I see that.

Q Okay. Now, this is referring to another alternative method to Bertelsen?

A Uh-huh.

Q That uses BLG crystallization, correct?

A Yeah. I haven't read that. 790 I'm not familiar with.

Q Okay. You didn't review that one?

A Do you have a copy of 790?

Q I do not. I'm just asking if you reviewed it.

A I have to look at what 790 is.

Q I can't help you there.

A You've got a number here, and I don't have that number that pops up in my head.

Q I'm just asking if you reviewed that patent.

A Okay. You're asking me if I reviewed 2,790,790 A1.

Q Correct.

A That's like asking me to remember the e-ticket number on my flight home tonight.

Q Okay. Well, you remembered reviewing Nielsen 450.

A Well, that's -- that's a pillar of my declaration.

Q Okay.

A I don't believe I even talked about this 790 in my declaration.

Q Okay. So as you sit here today, is it fair to say you have no present recollection of having reviewed U.S. Patent 2,790,790?

A If you -- if you showed me a copy of 790,790 A1 or told me who the inventors in the title was of 790,790 A1, it might jog my memory.

Q Okay. I can google that. The inventor is named Klostergaard, Henry, and the assignee is JVS USA, LLC. Does that jog any memories of your --

A What country are they from?

Q I can't tell you.

MS. KAISER: It's issued in 1957.

THE WITNESS: '57. Okay. Yeah. I'm not familiar with that --

BY MR. KRIEGER:

Q Okay.

A -- patent.

Q So do you have -- the fact that this patent is described in Nielsen 450 as being optionally used in, quote, some embodiments of the invention, unquote, isn't that fair to say that

certainly this crystallization process could be used in the alleged invention described in Nielsen 450?

A I don't think it's obvious from looking at this, because now that you've mentioned '57 and this stuff and I read high salt, my guess is what they did is used ammonium sulfate precipitation to salt out the BLG, which then formed crystals, and if you use that in a food preparation you would kill somebody.

Q So in reaching that conclusion are you just ignoring the statement by the inventors in the application that they're saying, quote, in some embodiments of the invention, unquote, that this is -- this technique is used?

A So I'm a PhD chemical engineer who worked in dairy technology for the last 35 years. I'm not a lawyer. And when I read the words "in some embodiments of the invention," that sounds like legalese to me.

Q Do you not understand what that means?

A I really -- you know, sometimes I've read what lawyers write and I think it -- I interpret it into -- like the word "comprised," what does comprised mean, you know, and then I realize,

oh, that's a legal term. These are legal terms. In some embodiments. Nobody talks about embodiments in common language and then this is a legalese term and you're asking me as a non-lawyer, I'm really not good at the lawyer stuff, to say what does this mean. I can only guess as a non-lawyer guessing what this legalese means.

Q Okay. So you don't know what the sentence means on the bottom of page 61; is that your testimony?

A I know what parts of it mean.

Q Okay.

A I don't know what "in some embodiments of the invention" means in legalese.

Q Okay. You're under oath. You understand that, right? And your testimony here under oath is that you don't understand what "in some embodiments of the invention" means? Is that --

A I don't know what the legal meaning of that is.

Q Do you know what an embodiment is?

A I'm not sure what that means legally.

Q I -- I'm not apparently aware of it either because to me it just means embodiment, but I'm

just curious. You seem to be imparting some magical legal meaning to this, and I'm just saying from the words themselves do you know what the word "embodiment" means to a layperson, to a person skilled in the art?

A I think of embodiments as like if I had a collection of things, this would be the embodiment. It's like a collection of things. That's what I think embodiment means. But I might be wrong.

Q Okay. If you can't understand this last sentence that's fine. I'll move on. I just want to make sure it's clear that --

A Well, the rest of the part, the stuff after the comma I can understand clearly.

Q Where they say --

A Because it's science language.

Q Okay. Where they say that the preparation of the BLG-enriched composition includes or even consists of high-salt --

A High salt.

Q -- BLG crystallization?

A Yeah. Yeah. That's -- that's -- I understand that.

Q Okay.

A And from that I can see what they mean is that they -- they've probably salted out the BLG so that the BLG's supersaturated and then it forms crystals.

Q Okay.

A I -- you know, I don't know legally whether they can put that sentence in there without having tried it in the laboratory.

Q Okay. Is that -- is that relevant to what it says to a person skilled in the art?

A Well, you were asking me whether it would work or not, and I'm, like, not even sure.

Q No, I didn't ask that. I didn't ask that at all. What I asked you is isn't -- isn't it true that Nielsen 450 expressly discloses that the BLG-enriched composition may be formed according to this process in U.S. Patent 2,790,790?

A Yeah. And so my problem with saying it that way is that if I had a flat tire and somebody said isn't it true that you could fix that flat tire with a copper penny, I'm like, hmm, that's not what I would do. It certainly wouldn't work as well as using the right tool, which is BLG crystals. Could I have done it? It

probably wouldn't have worked so well. But might it have been tried? Well, somebody could try it and it might work poorly.

Q So you reject out of hand this bottom sentence of page 61 of Nielsen 450?

A I think what they're --

MS. KAISER: Give me a chance to object.

THE WITNESS: Sorry.

MS. KAISER: Objection to form.

THE WITNESS: I think you're trying to trap me into saying something I don't want to say.

BY MR. KRIEGER:

Q No. I'm not trying to trap you at all. I'm trying to understand what does this sentence mean if -- if anything, other than they're saying this is an embodiment of the invention? Like what else could it possibly mean?

A So I'm not a lawyer. I could render an opinion that's sort of on this topic if you wish.

Q Okay. Hold right there. I'm not asking your opinion as a lawyer.

A Yeah.

Q I'm asking your opinion as an expert, like as

an expert who has read presumably hundreds of patents in your career?

A Probably.

Q Okay. Can you make any sense of that sentence, and if not, why not?

A Okay. I'd like to answer that question, all right? I've written many patents with lawyers and a lot of times the lawyer writes a lot of it and I give them the examples and they put sentences like in this -- this in here, "in some embodiments of the invention," and they'll throw in everything but the kitchen sink just to cover all the bases. And the lawyer wrote that, not me. And then it comes out in the patent and then they could ask me, "Well, have you ever tried some of these embodiments of the invention that involve high-salt BLG crystallization?" I'm like, "No."

Q Isn't it true that taken at face value a BLG-enriched composition could have been made by the process of U.S. Patent 2,790,790? Again, taken at face value in Nielsen 450?

MS. KAISER: Objection. Form.

THE WITNESS: You could use wheat flour in the invention of Nielsen 450 and it

wouldn't work so well, but you could try it.

BY MR. KRIEGER:

Q Okay.

A I'm just not sure that they ever tried it.

Q Okay. And because of that, you just don't give any weight to that sentence?

A I think that -- I think this is the lawyer throwing the kitchen sink into the language here that you could try A -- or you could try A, B, and C in some embodiments of it.

Q And hence you can disregard it?

A And I think that if you ask Nielsen --

Q Sir -- sir --

A Yes.

Q -- and hence you can disregard it?

A You don't need to disregard it. It's there. I just -- I just think that you have to think about what does it actually mean happened.

Q Okay. I don't understand that answer, but we'll let the testimony stand for what it's -- what it says.

A Well, I can clarify that if you want.

Q I think we have spent enough time trying to clarify that. We'll move on.

Let's go to your declaration at paragraph

144.

MS. KAISER: I think we've been going about an hour.

MR. KRIEGER: Have we?

MS. KAISER: Yeah.

MR. KRIEGER: Sure.

MS. KAISER: Since you're switching.

MR. KRIEGER: It's a good time.

MS. KAISER: Yeah.

THE VIDEOGRAPHER: Off the record at 2:20 p.m.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record. This will mark the beginning of Media Unit Number 5 of the video-recorded deposition of Mark Etzel. Today's date is April 3, 2026. The time is 2:37 p.m.

BY MR. KRIEGER:

Q Okay. Dr. Etzel, earlier you mentioned the concept of a mother liquor. Remember that?

A Yes.

Q And that's the liquor, the liquid that is above the crystals as the crystals form. Is that a fair characterization?

MS. KAISER: Objection to form.

THE WITNESS: It's the liquid left over in the noncrystal phase.

BY MR. KRIEGER:

Q Okay. And we talked about how -- I believe you -- you testified that the BLG is reduced in the mother liquor because it's been crystallized and is now in the form of crystals; is that correct?

A That's correct.

Q Okay. What about GMP? GMP would not be reduced in the mother liquor, correct?

A It seems like a simple question, yeah. GMP in the mother liquor would be depleted by the removal of the BLG. I'm sorry. Let me start over. I misspoke.

Q Okay.

A Say your question again?

Q Sure. The GMP would not be reduced in the mother liquor. That's the question.

A Yeah. After the crystallization.

Q After crystallization?

A That's how the mother liquor is formed. So the mother liquor contains everything that's not in the crystals, and the crystals are pure BLG. I mean, there might be a small amount of GMP that

clings to the liquid. It's hard -- you know, you can never drain all the liquid off. And so there might be some mother liquor that clings to the crystals when you spin them out and then there would be less mass of GMP in the mother liquor because some of it's entrained with the crystals as they got centrifuged out.

Q Okay.

A So when you say GMP is reduced, it could be the mass of -- total mass of GMP or it could mean the concentration of GMP.

Q So if the ALA is removed from the mother liquor as the mother liquor is formed?

A ALA?

Q I'm sorry. If the BLG -- excuse me. I'll start over again. Strike that.

If the BLG is removed from the mother liquor as the crystals are formed, is it fair to say that the relative concentration of GMP increases in that crystallization process?

MS. KAISER: Objection to form.

THE WITNESS: I would say that the -- what's going to happen is that the -- the liquid before crystallization is supersaturated with BLG. When the BLG crystals form, the

degree of supersaturation decreases. So the supernatant or mother liquor is depleted in BLG and everything else, except for this entrainment issue, and sometimes you get, you know, like a few molecules out of billions that might be even incorporated into the crystal, just like no diamond is crystal clear without color.

BY MR. KRIEGER:

Q Sure.

A You know, it's -- it's carbon that's crystallized but it's -- maybe there's some small impurity. Sometimes you can't even tell, even in a diamond. These crystals could incorporate a tiny amount, I would say -- call it a few molecules of GMP in them or other things in them and then there might be some GMP removed, but it would be really hard to measure that.

Q Okay. Listen carefully to the question, okay? The question was if the BLG is removed from the mother liquor as the crystals are formed, is it fair to say that the relative concentration of GMP increases slightly in that crystallization process?

MS. KAISER: Objection to form.

THE WITNESS: The concentration of GMP in the mother liquor increases because you've removed the BLG crystals. That's what I hear you saying.

Q Correct. Correct.

A Yeah. And theoretically I would say that's true, but in practice it might be difficult to measure the difference.

Q Okay. Let's turn to your declaration, paragraph 144, please. I'll shift gears a little bit.

A Yup.

Q So at the end of page 71, you state, quote, "A named inventor from Nielsen 450 identified and provided me a stored sample of the same batch of BLG powder that was used in the original experiments described in Examples 11-12."

Do you see that?

A Yes, I do.

Q Who is the inventor you were referring to?

A That's Tanja Jaeger.

Q Okay. But you also indicated earlier that you spoke with Dr. Neilson?

A No. Kasper Lauridsen.

Q That's correct. It wasn't Nielsen. It was -- what was the name again?

A Kasper Lauridsen. I ran into him by accident in the cafeteria.

Q Did you speak with any other inventors?

A Of -- of which -- which patent?

Q Of Nielsen 450.

A Of Nielsen 450. Okay. No.

Q Okay. And what did you discuss with Ms. Jaeger?

A Well, Tanja and I worked together in the lab for three days in a row. It was like eight-hour days.

Q So was she effectively your -- acted as your hands and you were instructing her on how to conduct experiments? Is that --

A Yeah. Kind of like that because -- it's like a grad student and a professor.

Q And one of the things you talk about in your declaration is that the BLG powder you used was allegedly the same as the one that was used in Examples 11 and 12 of Nielsen 450. Is that correct?

A Yes.

Q Okay. How do you know it was the same powder?

A I held it in my hands. It was double- and triple-bagged, came out of a dark closet that was actually saying that -- Soren Nielsen's closet, buried in the back -- she couldn't find it initially, and then she looked in his closet and in the back and she said, "Well, he never cleans his closet out. He's a mess." And so she scrambled and looked and looked and looked and then there it was. All right. And then she showed me that bag and where she found it, gave it to me and I held it. I read the labeling, which was obviously old, and the triple bagging of it, and I marveled that she found it. It was just a stroke of luck.

Q And do you know if the powder was kept in that locker the entire time?

A I'm -- I'm certain it was.

Q Do you have any personal knowledge that it was there the whole time?

A She told me that, and she's a very trustworthy person. You could see that it was all crumpled and in the back, fished around for it, along with all the other stuff he just throws in his locker and shuts the door. And so it was -- it was pretty obvious from the circumstances of

the evidence that this had been in there.

Q Okay.

A From the -- from looking at the package from how it's packaged up, you know, it's -- it was pretty obvious that she was telling the truth.

Q Okay. Let's -- we're going to show you another exhibit here.

A Okay.

Q So I'm handing you what's been marked as Exhibit 1,021. It's the declaration of Tanja Jaeger.

A Okay.

Q You, of course, recognize this document; is that correct?

A No.

Q Oh, no? You've never seen this document?

A No.

Q Okay. Did you read the transcript of Ms. Jaeger's deposition?

A No.

Q Or any summaries of the deposition provided to you?

A No.

MR. KRIEGER: I won't ask the next question.

BY MR. KRIEGER:

Q Is there a reason you didn't review this document that you know of?

A I don't think it was posted online when I looked -- I would look every once in a while and google this whole case. I didn't see it posted online. Nobody from Perkins gave it to me. I was curious -- I would have read it if I found it.

Q Okay.

A I was curious what she said. So, yeah, I know I absolutely have not seen this before. Can I keep this?

Q I mean, it's publicly available information, so...

A Okay. Yes. I'd like to keep it. I'll read it tonight.

Q All right. Let's go to paragraph 8.

MS. KAISER: This is on 1,021?

BY MR. KRIEGER:

Q Correct. Exhibit 1,021, paragraph 8.

A Paragraph 8. I see. There we are.

Q I'll give you a chance to read it since this is new.

A Yeah. It doesn't say that he's a complete

slob. She was kind about that. Okay. I finished reading 8.

Q Okay.

A It's kind of -- there's a back story.

Q What's the back story?

A About -- it's just bizarre that it was in there and that it was buried in the back, stuffed in like dirty laundry in a closet, you know, and then she fished it out and it was a discovery and it was a little bit kind of shocking.

Q Was it literally in there mixed with dirty laundry?

A Not really dirty laundry, but --

Q Okay.

A -- you know, it's like...

Q You're under oath, so you've got to be careful.

A They go through all these projects, you know, and what he does is just throws it in there and slam, shuts the door.

Q Okay.

A Her lock -- locker is neat and organized.

Q Okay. And his was not?

A His was not.

Q And she's the one who found it, correct?

A She did, yeah.

Q Ms. -- Ms. Jaeger.

A Yup.

Q Do you know whether Mr. Nielsen's cupboard where this material was found was locked?

A I don't remember whether she opened it with a key or not.

Q Okay.

A Yeah. It's the locker right next to her locker, and so, you know, she probably had to use a key to open her locker, and I have no idea.

Q Do you know if anybody else opened the sample and used some of it in between when it was created and when Ms. Jaeger found it?

A I don't know.

Q It's possible it was?

A Theoretically possible. I mean, you have to think about -- they're busy --

Q Sure.

A -- people. You know, they're just trying to get the work in -- done as it comes flowing in and they don't sit around with time on their hands saying I'm going to go grab that back from ten years ago, seven years ago and fish it out and do some experiments with it.

Q Okay.

A You know, you'd have to wonder, like, they're not going to do that. They're busy people.

Q Okay.

A And the way she dragged it out of that locker it didn't look like she had -- had been -- that it had been accessed.

Q So this paragraph you just read, Ms. Jaeger mentions that she reviewed past laboratory records. Are you familiar with the records she's referring to there?

A I -- I am to the extent that all of their lab notebooks are electronic now, and so when she's reviewing it she's probably looking at her iPad or something like that to review it. There's not like a paper document that they use.

Q Okay. Did you review the laboratory records at all?

A No.

Q You didn't review any laboratory records --

A I don't speak Danish.

Q Hold on.

A Oh, sorry.

Q Are all the records in Danish?

A A lot of it's in Danish because that's their

native tongue and they -- it's quicker and easier for them to speak in Danish. If I'm not in the lab they're going to be speaking Danish.

Q Okay. But to your recollection did you review any laboratory notebooks or records in connection with your work when you were at Arla for those three days?

A Yes.

Q What were those?

A The laboratory records and notebooks that she made while we did our experiments.

Q Okay. And did you consider those in preparation of your declaration, any experiments you conducted in them?

A That -- I -- yes, I would say, because the data is in that, and I had the data that I had to use to prepare the declaration.

Q Okay.

MR. KRIEGER: And obviously we made the request, Jessica, at the last deposition and you took it under advisement that you would produce it. You've had a lot of time to think about it. Do you have any conclusion on that?

MS. KAISER: I believe he's talking about records they made during the experiments

in 2025. I think that information would all be in his declaration.

MR. KRIEGER: Well --

THE WITNESS: I can show you pages from her electronic notebook that's in my declaration.

BY MR. KRIEGER:

Q Okay. Are there -- hold that thought. I would love to see that in just a moment, but with respect to the other ones we talked about, do you have a position? I know your position on that, but are you going to provide those or not?

MS. KAISER: I don't think it's appropriate to talk about that in this deposition. He just said he didn't review any past laboratory notebooks.

MR. KRIEGER: I know. It's just --

MS. KAISER: So we can talk about that outside the context of this.

MR. KRIEGER: I'd rather get it on the record.

MS. KAISER: No.

MR. KRIEGER: You're refusing to answer that simple question?

MS. KAISER: Yeah, because it's not about this deposition. You don't get to bring up any discovery dispute you want that has nothing to do with someone's deposition in the middle of the deposition. I'll talk to you about it after.

MR. KRIEGER: Okay. That's fine.

BY MR. KRIEGER:

Q Okay. So where are the lab notebooks that you're referring to that are mentioned in your declaration?

A So there's no lab notebook in the sense of like a paper book. There is the electronic notebook.

Q Uh-huh.

A So it's pages in an electronic software. And you can enter anything in you want to. And I believe I -- this drawing on page 88 is from her electronic notebook. And I didn't -- I don't -- you know, I looked at that. That was a year and a half ago or so. I don't remember everything, but I can tell you stuff that is not -- is stuff I remember that was in there, and like these analyses on page 89 --

Q Uh-huh.

A -- the flow diagrams on page 82, and there's more than one. Page 82. There's more than one. These photos that are in page 84. The flow diagram on page 86. That's all going to be in her electronic notebook. The beakers diagram on page 88. Probably the -- the table on page 89.

Q Doctor, is there anything that was in her electronic lab notebooks that is not in your declaration that you reviewed?

A Yes.

Q What was that?

A I don't remember.

Q Okay.

A I just know there's -- there was a lot in there and it's not all -- it's not a 100.0 percent reproduced in my declaration.

Q Understood.

A Because there's -- I'm trying to focus on the data here, but she's got stuff like what kind of homogenizer was used, what pH meter was used, you know, what -- what did they use to adjust the pH, sodium hydroxide, what molarity, you know, all the gory detail of doing lab work, that's in her lab notebook.

Q Okay. Understood. Let's turn to paragraph 145, please, of your declaration. Are you there?

A Yup.

Q Okay. Here you talk about how upon your inspection the stored sample provided to you had been labeled with a batch number and a date --

A Uh-huh.

Q -- that not only matched records documenting the original experiments reported but also was consistent with the N11 notations visible in Nielsen's Figure 10. Do you see that?

A Yeah.

Q What records are you referring to here?

A So on the bag was -- it said on labeling tape "Batch N11 28-11-17 Week 48."

Q Right. And then you say that matched records documenting the original experiments. What records were you referring to?

A Yeah. And so she has the electronic notebook from when she did the experiments where she's a named inventor. And she can go back and look at that and then she can see, oh, yeah, that's the sample we used that -- for the data in the

450 patent.

Q Right. But this isn't her testimony. This is your testimony. And you're testifying that that number matched the records. And I just wanted to know what records you were talking about that you presumably reviewed to make that -- that statement.

MS. KAISER: Objection. Asked and answered.

THE WITNESS: Yeah, I think I already answered that question.

BY MR. KRIEGER:

Q No. What -- answer it again, please. I didn't hear an answer to that one. Which records are you referring to there that you -- first of all, did you review records and compare the records from the original experiments to the batch number you just mentioned?

A Okay. So in -- in my declaration, and I'm going to look for this, see if I can find it, on page 82 you can see a section from her lab notebook.

Q Is that on the bottom of page 82?

A It is.

Q Okay.

A And in that it says "Batch N11 28-11-17 Week 48."

Q Okay.

A That's the sample number. That's what that is.

Q So is this the record that you're referring to in paragraph 145?

A There might have been more, but this is definitely one of them. So the very first day we went through this whole procedure that you're quizzing me on, chain of custody questions, and -- and so we're looking for this evidence that this Batch N11 28-11-17 Week 48 is the one she mentioned. All right. The one that she did the work with in 450. So she showed me evidence that this is the one that she got the data with in the 450 patent, all right?

Q Okay.

A In -- and I'm -- I'm trying to remember if in here they even have something that says something about the batch it was in this -- in this patent. And then she showed me the powder she found in Soren's messy locker, and I looked at the labeling on it and the dates on it and -- and she said, "This is the sample that

we used in that work back then and we're going to use that in the work that we'll do together here in Denmark in the same lab to reproduce that."

Q Okay. So when the original experiments were done, was that done in more conventional lab notebooks, handwritten, or was that -- even back in the original days was that done in the computer?

A I can't remember. You know, in 2017 computers existed.

Q They did.

A And people were using electronic lab notebooks even back in 2017, and when she went back and looked in these lab notebooks I think she meant, like, electronically. It's all in there -- you know, it's all stored in their master database, and so it's not like everybody's got that on the hard disk on their computer and she can look it up.

Q So you -- you don't recall whether there were actual lab notebooks in connection with the original experiments reported as Examples 11 through 12 in Nielsen 450?

A I can speculate and tell you what I think

probably happened.

Q Okay.

A All right? Because I wasn't there in 2017. And if a lab notebook is electronic, there is no paper copy to be seen, all right?

Q Okay.

A And so I could go there and not see a paper lab notebook, and that would not be unusual because in 2017 everybody was using electronic lab notebooks.

Q Got it. Okay.

A All right. And so did a paper lab notebook exist? I doubt it because they probably started -- I mean, 2017 is like everybody's got computers and iPhones. Why are they going to have a paper lab notebook?

Q Okay. I was just asking if they did or if you had a recollection.

A And so then you ask me ironclad do you know absolutely in 2017 if there was a lab notebook.

Q I didn't ask ironclad. Just asked if you had a recollection. If you don't, that's fine. We can move on.

A But you're implying that there was a paper lab notebook. I think there probably wasn't.

Q Okay. Fair enough.

Are there any other records that you consulted while you were at Arla and did your work in connection with your declaration?

A Could you be more specific? Any other records, you said.

Q Arla records that you reviewed.

A Arla records that I reviewed. Related to this work?

Q Correct.

A No.

Q Okay. Let's go back to Exhibit 1,021 again. That's Ms. Jaeger's declaration.

A Declaration. Okay.

Q And if you could go to -- let's see here -- paragraph 9, please.

A Okay.

Q It ends on page 3.

A Okay.

Q Go ahead and just take a moment to read that to yourself, please.

A (Witness complies.) Yeah. Okay.

Q Okay?

A I just finished now.

Q Okay.

A Yeah.

Q So you can see there's a table on page 3. Do you see that?

A Yes.

Q This table shows the composition of BLG powders that -- powder that you used in your experiments; is that right?

MS. KAISER: Objection to the form.

THE WITNESS: Yeah, let me look at the -- so what you're asking me is whether the -- the third column there says "Measured 2025" is the sample that I used in my experiments?

BY MR. KRIEGER:

Q Yeah. I'm just asking for that confirmation.

A Okay. And I just have to check the numbers --

Q Sure.

A -- to give you a truthful answer. Sure. Yeah. It looks like -- because the see the 89.25 --

Q Uh-huh.

A -- in Column 3 for total protein and I see on page 82 of my deposition the same 82 -- 89.25 percent from 2025.

Q Okay.

A And so it looks like this measured 2025 is the

analysis of that bag of powder that we used that came from the 2017 patent application -- patent, that 450 one, that that's the same bag.

Q Okay. Who performed these tests?

A This -- so it's a big corporate lab and they have an analytical services division and the analytical services division does Kjeldahl nitrogens, so they submit it to that lab and get the data back.

Q Do you know who submitted this sample for analysis?

A I don't know. I mean, I would suspect Tanja did.

Q Okay. Now, there are two measurements here. One was measured in 2018/'19.

A Uh-huh.

Q And one was measured in 2025. Do you see that?

A Yeah.

Q Do you know why the sample was measured in 2018 and 2019?

A Well, so when I read this, you know, and she's saying that the -- the following table compares compositions, so they're making this [sic] BLG crystals, you know, and they're making batches and batches of it and so -- and they're doing

experiments to try and develop applications for this new discovered BLG crystals and so they're constantly manufacturing batches of the crystals, spray drying them, testing them. So she can look up data from that type of product, using the same manufacturing line, made in the same way, and say, oh, we analyzed some in '18 and we analyzed some in '19 and here's what we found.

Q Okay. Do you have any reason -- do you have any specific knowledge, personal knowledge, about why that test was done in 2018/2019?

A Because they always analyze the product, every batch they make.

Q Well, it's my understanding this is the product that you're claiming was the same batch from Nielsen.

A No. Only for measured 2025.

Q Okay. So what is -- what was the origin of the powder in 2018/2019?

A So when I read this I think this is just other batches that they made during manufacturing.

Q What's your basis for that?

A Okay. Let me read what she -- yeah. It says the following table compares compositions of

the BLG powder in 2018, 2019, and 2025.

Q So here it says "the BLG powder." Doesn't that suggest it's the same powder?

A Yeah. That's a good -- good point. It's not clear from here. Is this just, you know, does the BLG powder mean the BLG crystals that we make every day in the manufacturing plant or does the BLG powder mean the BLG crystals that we made back in 2017 and tested. It's not clear from the language here.

Q Okay.

A And so I have to guess, and my guess is that that data on the right-hand side is -- is the analysis of the bag from 2017 when they resubmitted it for analysis to the analytical lab, and then 2018, 2019, why would they pull that sample out of Soren's closet and unpackage it and test it in 2018 and 2019?

Q Yeah, that was my next question.

A That doesn't make sense to me.

Q Well, maybe they were looking for more uses for the powder.

A But they're making the batches every day of fresh powder. Where would they pull -- they didn't even know that was in Soren's locker.

It was stacked behind the other dirty laundry. It just doesn't make sense to me that the measured 2018, 2019 was that bag of powder that they didn't even know they had.

Q Or maybe they had forgotten. That was six years later.

A Yeah. But it was sitting in there the whole time. So in 2018, 2019 implies they knew where it was, they pulled it out, not knowing why -- they've got tons of this powder all over the place -- and so they pulled out the 2017 bag, unpackaged it, tested it again. It doesn't make sense.

Q But it is possible they went and tested the same powder and then put it back in the cabinet?

A Unlikely. Unlikely.

Q So it's your position that this is an entirely different batch of powder?

A That's my -- that's my -- if I had to look at this I would say yeah, that's what I think is going on here.

Q Why would you bother comparing -- excuse me. Strike that.

Why would Ms. Jaeger bother comparing a

powder -- a BLG powder that was measured in 2018 with a powder that was measured in 2025 unless they were the same powder? Why would that -- why would there be any significance to doing that?

A Every manufacturing company in the United States, in the world does that.

Q But for purposes of this proceeding why would that be relevant?

A Why would you do that? Because when you're manufacturing a food product like this day in and day out, years on end, you want to have consistent manufacturing. You want -- the iPhone they made for me is no different than the iPhone that they made for the next customer.

Q Okay.

A That they all perform the same and they all are the same -- meet the quality specs. So every batch of BLG crystalline powder that they make they're going to test and they're going to look at it versus their historical database and say does this meet the spec. They test every batch.

Q Is there a specification for the BLG powder?

A I'm sure there is, yeah.

Q Do you know what it is?

A I don't -- I don't have it -- I don't have a copy of their spec sheet. They give that -- they're -- they're picky about that.

Q Did you review it when you did your work at Arla?

A I never worked at Arla. I was just there for a week.

Q The three days that you worked in Arla --

A Yeah.

Q -- did you review the specifications for the BLG isolate powder?

A No.

Q Okay.

A No. Because they're pretty tight-lipped about that.

Q Okay.

A I'm not a customer. You can ask Tanja. But, you know, when I look at her declaration, which I hadn't seen before today, and I have to read between the lines and guess what she means by this, and she says "Measured 2018/2019," she's looking through their historical database. They've probably made hundreds and hundreds of

batches of BLG crystals, and she's picking out data on different batches to see how it compares to the one from 2025, which is the one that they found in Soren's locker.

Q So you think of all the measurements that she just cherry-picked this one?

A Yeah. Otherwise you'd have a table that has 500 numbers in it.

Q Or just one. Just the 2025 test results.

A But she wants to make sure that you see that there's -- there are differences.

Q Okay.

A Each batch is a little different.

Q Okay.

A All right. You know, what does the customer care about? Mostly they're worried about whether these numbers are similar and within the tolerance range of the specification.

Q So there is variability from batch to batch?

A Yeah. There always is. Yeah.

Q Do you know if the tests that were used in connection with the 2025 data set we just discussed are the same tests [sic] methods that were used in determining the composition of the powders in Nielsen 450?

A It's the same instruments, but -- you know, instruments wear out. Did they get a new Kjeldahl machine? Maybe. I don't know. But all -- it's the same principle, the same chemistry, the same procedure. Everything's the same.

Q But you don't have any personal knowledge about them using the exact same equipment that they used in connection with the testing of the Nielsen 450 samples?

A Some of the equipment was exactly the same.

Q How do you know that?

A Because when we did the experiments I -- we talked --

Q Okay.

A -- you know, and we're chitchatting about this and that and the other thing, and some of them I remember, they said we've had this -- we've had that instrument for so long or we've had this one for so long, you know. That's a really nice HPLC; how long have you had that? Well, we got that just last year, you know. So I know some of them they're like equipment they've had from 2017 and other stuff they've gotten new stuff.

Q Okay.

A Yeah.

Q What were some examples of the new machines they had?

A They had a really nice new HPLC. That was nice. They had a new light scattering instrument. And you'll see the light scattering data in the -- in the deposition. I'll show you -- yeah, this data on figure -- on page 162, I think it is. Light scattering data. No. No. That's data from Ozturk. Sorry. I misdirected you. I'm not going to be able to find it -- oh, no. Wait. I think it's on page 111. This is particle size data from the Malvern light scattering instrument, the Mastersizer. Do you see that page 111?

Q I do. I do.

A Okay.

Q Let's go back. I want to focus still on this paragraph -- this paragraph 9 in Ms. Jaeger's --

A Okay.

Q -- declaration.

A I just wanted to add that that instrument is the laser light scattering equipment. That's

an expensive instrument, and I saw that and I thought wow, that's amazing. And she said yeah, that we just got that.

Q And that's not a test method that they had available when they had the Nielsen 450?

A Right. But the homogenizer was old.

Q Okay. So, yeah, I want you to please read through the entire paragraph 9.

A 9. Okay. Yeah. Okay. I read it.

Q So I want to focus on the sentence above the chart where it says, quote, "A lower dry matter content in the powder in 2025 is likely due to moisture absorption during storage," unquote.

Do you see that?

A Yeah.

Q What does that mean to you?

A So -- so it's -- it says like the -- the last column is a measured 2025; that's the N11 sample that they analyzed when I went there.

Q Okay.

A And that has a dry matter content of 92.18 percent, but then you see that typical batches that they've made over the years came out at 95.19 percent, and that's a higher number of dry matter. And if it's not dry matter it's

wet matter and that's moisture. That's water.

Q So there's water in the dry matter measurement?

A There's water in every powder. Flour has water in it.

Q What does dry matter mean?

A Dry matter means that they take the -- the food material and they put it in an oven and under a vacuum and they pull the water out over a period of days and they weigh it. And it weighs less than when they put it in.

Q Okay.

A And what -- what -- what's not there anymore? The -- the water.

Q Okay.

A And so dry matter is -- is -- is the material that's left after you put it in a hot vacuum oven and you pull off the water, dry matter. It's -- it's stuff that didn't evaporate. What evaporates? Water. Dry matter is what's left.

Q Right. So dry matter should not include water in it, correct?

A The dry matter in the end is -- is just the -- what's left that didn't evaporate, yeah.

Q So dry matter should not include any water in it?

A It might -- it might have -- you know, you can't say "any" because, you know, water's a small molecule, you know. Are there 10 molecules of water in there? Well, yeah, maybe there is. You know, to get absolute zero water in there would require an absolute vacuum, which is not something you find in Earth and would require infinite amount of time to pull it out.

Q Okay.

A So when you say "any," you know, it's -- you've got to qualify it with it would be small.

Q So you don't interpret the sentence with her saying a lower dry matter content is likely due to moisture absorption during storage as being a suggestion that these are, in fact, the same powders, just measured years apart from one another?

A Yeah. What I think has gone on there is that the measured in 2025 was in February 2025 when I went over there. That's what I think that is. And the measured in 2018 and 2019, who knows when they measured that. They make batches of this all year round. It could be in the summer, while the air in the summer is more

humid than the air in the winter. So it could be just simply that.

Q So you don't know when the batch that was measured in 2018/2019 was manufactured, correct?

A I have no idea. I would say probably in 2018 and 2019.

Q What's your basis for that?

A Because it says 2018, 2019.

Q Well, that was when it was measured. It might have been stored in a locker somewhere, right?

A When they make batches they test them the same -- at the same time, basically.

Q But you have no personal knowledge as to when that batch was manufactured that was measured in 2018/2019, correct?

A I would say as a person skilled in the art, being very familiar with food manufacturing and testing, they're the same -- in the same year.

Q Okay. But again --

A Unless it's December 31 and January 1.

Q That's your professional view, but you have no personal knowledge as to when it was manufactured?

A So you're casting doubt on something that is

very unlikely to be true.

Q No. I'm not. I'm trying to understand the source of the knowledge. There's a very big difference between personal knowledge and my professional opinion, and I'm sure you can appreciate that.

A Sure.

Q Right?

A Yeah.

Q So when I ask you personal knowledge it means you have some evidence that supports an understanding or otherwise were personally involved in the manufacturing. Presumably you were not involved in the manufacture of this batch, but tell me otherwise if I'm mistaken.

A It doesn't make sense to me because -- all right. This is my iPhone. I put it over there. Then I ask Jessica, "Whose iPhone is that?" And you say, "That's my iPhone," and I say, "No, that's my iPhone." And then somebody could say, "But it's closer to Justin, so how do you know that's -- that's your iPhone?" You know --

Q Because you have personal knowledge that you just put it there. That's the difference.

A Right. I have personal knowledge that when I went there they gave me that pack of powder and it had the -- those labels on it and I know that was from 2017 and you're trying to cast doubt on that.

Q No, no. I'm not even asking about that one, Dr. Etzel.

A You were asking about that.

Q No. I'm asking about 2018/2019, okay? That's the one I'm asking about.

A Yeah, right.

Q And just trying to confirm that you don't have personal knowledge about when that was manufactured although, as you just testified, it's your opinion it was likely manufactured in 2018, I think you said. Is that --

A That's correct.

Q That's your position. And you agree with that statement, correct?

A What you just said is -- makes sense to me.

Q Okay. Thank you.

A Right. It's -- yeah. I agree with that. Just to repeat what I thought you just said was that the sample -- the data that says measured in 2018, 2019, I think that that was probably

batches of BLG crystalline powder that were measured probably at the same time it was manufactured and reported here.

Q Okay.

A And -- and -- but I absolutely cannot swear to my life with death as the penalty that that's true.

Q Hopefully it doesn't come to that, but understood.

Okay. Let's -- I want you to look, please, at Nielsen 450, if you would, and turn to Table 9.

A Could you say what page that was on?

MS. KAISER: 108.

THE WITNESS: 108. Okay. Got it.

BY MR. KRIEGER:

Q It's on 108.

A Yup. I got it.

Q You beat me to it. Okay. All right. Are you ready?

A Yeah.

Q Okay. And, I'm sorry, there are a lot of documents here and I apologize for the cumbersomeness of this, but I also side by side would like for you to pull up, please,

paragraph 145 of your declaration on page --

A 145.

Q Correct. On page 72.

A Okay. I got it.

Q Okay. So in Table 9 of Nielsen 450 you can see there's a chemical composition of BLG isolate powder A. Do you see that?

A Yes.

Q Okay. And it has certain values for different components, including a dry matter content of 95.19. Do you see that?

A Yes.

Q And the dry matter reported from the measurement of Ms. Jaeger in her declaration was 92.18. If you still have that in front of you, you can add one more to the mix. Do you see that?

A Yes.

Q And you discuss this in your declaration at paragraph 145 at the bottom of that paragraph where you --

A Yes.

Q -- say that that decrease is -- most likely reflects limited moisture absorption by the powder during storage. Do you see that?

A Yes.
Q What's your basis for that statement?
A Because you can see from -- actually, if you look at page 65 of the declaration, the dry matter content is 95.18.
Q 95.19, you mean?
A 95.19. Sorry. Yup. That's the same, right?
Q Right.
A Okay. And then on page 67 there is two -- Table 9 and Table 8.
Q Yes.
MS. KAISER: I think it's the same table.
THE WITNESS: Oh, that's the same table.
BY MR. KRIEGER:
Q It's the same table. Do you understand the question I asked?
A Yes. I think your question was in my declaration --
Q The question --
A -- when I said that it's likely moisture content --
Q Yeah. What's your basis for that? That was the question.

A Yeah. And so because when I looked at the other data, that was typical of these spray-dried BLG crystalline powder, the moisture -- the total dry matter content is -- goes up and down and there's nothing else that could do that except water.

Q Okay. What's your -- what makes you think that there's nothing else that could do this for a sample that's been stored for seven-plus years?

A Because there's no other volatile materials that are in the powder. It's gone through spray drying. If it was volatile it would have been volatilized.

Q How is percent dry matter calculated?

A My recollection -- I think other -- all people do it a little differently, but it's basically the idea is you take the powder, you weigh it, you put it in a hot vacuum oven and dry it for a few days, and then you take it out, let it cool off, and weigh it again and there's water -- and there's less weight. Why? Because the water evaporated and what's left is -- is the dry matter content compared to the original powder before you did the drying experiment.

Q Okay. So it's -- is it the weight of the heated composition over the weight of the preheated composition?

A It's the weight of the heated composition that was dried for two hours in a vacuum oven, cooled down for several hours, and then weighed again.

Q Okay.

MS. KAISER: Would this be a good time for a break? We've been going for about an hour.

MR. KRIEGER: That's fine with me.

THE VIDEOGRAPHER: We'll go off the record. The time is 3:32 p.m.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record. This will mark the beginning of Media Unit Number 5 [sic] of the video-recorded deposition of Mark Etzel. Today's date is April 3, 2026. The time is 3:50 p.m.

BY MR. KRIEGER:

Q Okay. Dr. Etzel, just want to revisit something we were just talking about. Would you expect that a BLG isolate powder or any whey protein isolate powder would undergo other

changes besides moisture absorption during storage at 22 degrees C and 30 to 35 percent humidity?

MS. KAISER: Objection. Form.

THE WITNESS: My deposition is really centered around the Bertelsen BLG crystalline powder, and I didn't really talk about that topic of whey protein powders in general. It's focused on the Bertelsen BLG crystal powder and applications for that powder in foods. So what you're talking about is not really a subject of my deposition.

BY MR. KRIEGER:

Q Are you saying that there -- you'd expect different aging characteristics of BLG isolate powders versus whey protein isolate powders, WPI?

MS. KAISER: Objection to form.

THE WITNESS: Say that one more time.

BY MR. KRIEGER:

Q Are you suggesting that there would be different things impacting the storage of a BLG isolate powder versus a whey protein isolate powder?

(Reporter clarification.)

BY MR. KRIEGER:

Q Are you saying that there are different -- different age-related things that can happen to a BLG isolate powder relative to a whey protein isolate powder?

MS. KAISER: Objection to form.

THE WITNESS: Yeah. Could I ask a question about your question?

BY MR. KRIEGER:

Q Just can you answer that question?

A It's an inspecific and indefinite question, and it's hard for me to answer.

Q Why is that?

A Because you're using the phrase "BLG isolate powder," which is different than what Bertelsen made and which Nielsen used.

Q What are those?

A So what -- what Bertelsen made is a BLG crystal powder. It's a protein powder made of BLG crystals.

Q Okay. So Nielsen 451, in fact, refers to the powder as a BLG isolate powder, so that's why I'm using that terminology. That's what was used in that patent. So with that understanding, can you answer the question?

A You just said Nielsen 451.

Q 450.

A Oh, could you repeat the question?

Q I'm just saying Nielsen 450 refers to the powders as BLG isolate powders, and that is on page 108, for example, and elsewhere, so that is the terminology I used in that question for that reason.

A Uh-huh.

Q So with that understanding are you able to answer that question?

A Well, I think that you're cherry-picking on an example of where they used the terminology "BLG isolate powder," all right, but in the rest of the document they talk about BLG crystals and BLG crystalline and BLG crystalline powder.

Q Okay. Well, with the understanding that when I say BLG isolate powder, I'm referring to powder that is formed from crystals, okay?

A Oh, okay.

Q With that understanding --

A Yeah.

Q -- are you able to answer the question?

A All right. And so what I hear you asking is referring to the BLG crystalline powder that

Bertelsen made, that's what you're referring to?

Q Correct.

A Could you rephrase your question using that terminology, please?

Q Would you expect a BLG isolate powder made from crystals or a whey protein isolate powder to undergo other changes besides moisture absorption at 22C and 30 to 35 percent humidity?

A Yeah.

MS. KAISER: Objection to form.

THE WITNESS: Okay. So now you're mixing apples and oranges.

BY MR. KRIEGER:

Q Okay. How are they different? How would you expect them to age differently?

A Okay. So the BLG crystalline powder and the whey protein isolate powder, which is not crystalline, it's amorphous proteins, are different. It's apples and oranges, all right? And so what you're asking me, I think, is to contrast how those might be different.

Q That's exactly what I'm asking.

A In how they age.

Q Exactly.

A All right. Thank you. Yeah. I want to make sure I understand your question before I answer it.

Q I understand.

A Okay.

Q I understand.

A So I --

Q But I also want to caution you that your testimony is being recorded and --

A Yeah.

Q -- taken down --

A Yeah.

Q -- and I just want to make sure that -- that if you don't understand a question, I of course want to answer that, but I also feel like sometimes I'm sensing you understand what I'm asking and sometimes you're trying to -- it appears to me, anyway, that you're appearing to dodge the question, and I don't want that to impact your testimony in any way. I just want to make sure that you're aware of that. So -- and by all means if you don't understand a question, let me know, but I just want to make sure that you understand that your credibility

is being assessed as well.

A Yeah.

Q Okay.

A Okay. So --

MS. KAISER: And, Justin, I think he's perfectly within his rights as a witness to ask you for clarification and to make sure he's answering the question that he -- that you're asking or to understand the question that you're asking.

MR. KRIEGER: Completely agree.

MS. KAISER: So I don't think it's fair for you to suggest that he's undermining his credibility by wanting to be clear about what the question is.

MR. KRIEGER: I -- I hear you and he is certainly within his right, but I think the record will speak for itself with this witness.

MS. KAISER: I agree.

THE WITNESS: So -- so -- and so if I could respond to your dodging comment about my testimony.

BY MR. KRIEGER:

Q Just -- go ahead, by all means.

A And so you've accused me of dodging the

question, and -- and I'm sorry that you feel that way. I don't want to be that way. I'm sorry that you interpret it that way. I'm trying to truthfully answer your questions as clearly as I can and as forthrightly as I can. And I'm a chemical engineer; you're a lawyer. We speak differently in different languages, and I know that sometimes words matter and the subtle meaning of words makes a difference. And so when you say things that you think are really clear, I'm thinking that's not clear.

Q I fully understand and appreciate that.

A And so it may sound to you like I'm dodging your question, but really I don't want to be that way. I'm not trying to be that way. I'm trying to be truthful, honest, and forthright with you as the best I can. And when you pose these questions I'm trying to understand what you're saying and answer it as straightforward, as truthful as I can. And sometimes what that means is you're comparing apples and oranges and I'm not sure what I should say.

Q I understand. For what it's worth, my original question was using the exact same language from the patents that are involved in this and

that's why it appeared that way to me. But in any event, I hear wholeheartedly what you're saying and let's just proceed with that understanding.

A Okay. It's a little upsetting to me to hear you accuse me of dodging your questions when I've spent hours and hours here working really hard to clarify your questions to make sure I understand it, even though it might not have been asked the way I would as a PhD chemical engineer.

Q Understood.

A All right? That's not about dodging or obfuscating anything.

Q Okay.

A All right?

Q Well, let's go ahead and proceed.

A And -- and so at least you know that that's not my intent, that's not what I'm trying to do, and I'm sorry you feel that way.

Q Okay. Well, using the same terminology for these compositions that were provided in the patents that you provided -- that you reviewed and that you provided your opinion about in your declaration, I'll restate the question for

you.

A Uh-huh.

Q Okay?

A Yeah.

Q Would you expect a BLG isolate powder formed -- which is formed through crystallization to age in a manner different from a whey protein isolate powder at 20 degrees C and 30 to 50 percent humidity?

A Yes.

Q How -- why would you expect that?

A Okay. And I'd like to point you to my declaration --

Q Okay.

A -- to answer that question. So in my declaration I talk about the differences between crystalline proteins and noncrystalline proteins. And I have to find that in here. If you find it, then I'd be happy if you'd point that out. This is like a hundred pages -- 169 pages to fish through here. Does somebody have an ability to search the document? Because the reference that I cited to this part I can tell you.

Q Sure. I can -- I can search it.

MS. KAISER: Maybe page 78.

MR. KRIEGER: Let's --

MS. KAISER: I'm sorry.

MR. KRIEGER: Yeah. Please don't. Thank you. Appreciate it. I know you're trying to help. Well, let's go to page 78.

MS. KAISER: That might not be what he's looking for.

THE WITNESS: I'll look and see.

BY MR. KRIEGER:

Q What term did you want me to search?

A "Crystalline proteins."

Q No matches.

MS. HUNTER: There's no matches.

THE WITNESS: All right. So I'm going to have to wing it then because I can't find it on the --

BY MR. KRIEGER:

Q Based on your experience, just interested in your -- your thoughts on that question.

A Okay. And I think in here I discuss it. But I'll try and recall it from memory. So crystalline proteins are much more stable than amorphous powders of protein, all right? The crystal structure forms a lattice, and only

that protein can build into the lattice, all right?

Q Okay.

A Much like coal and a diamond. And so that crystalline lattice not only is really good for developing high purity like eliminating GMP from BLG, but it can also help with stability. As you can imagine, when the protein molecules are packed into a crystal lattice they're much more stable to reactions, degradation reactions, oxidation reactions. They're more stable to moisture. They last longer. This is why, say, like human insulin is -- is crystallized by Eli Lilly and they sell the crystalline powder because it has a long shelf life. It's very stable to room temperature. You don't have to keep it at -- at negative temperatures in a freezer. Shelf life is everything in the industry. Once the shelf life's expired, that product, you can't sell it. Now it's just money gone. And so the BLG crystals are very stable to chemical reactions, including moisture uptake, any kind of other reaction. In addition, things that might react with GMP -- with BLG, like lactose, are

excluded from the crystal lattice, so they're not there. Only BLG is in the crystal lattice. Amorphous powders, that's not true.

Q Okay.

A Moisture can diffuse in. Oxygen can diffuse in and out. You can have residual lactose in the powder because it's not as pure because it didn't form a crystal lattice, and so the stability of whey protein isolate is typically far less than a crystalline BLG.

Q Okay. Are you aware of a -- a shelf life for BLG isolate powder formed through crystallization?

A No.

Q Did you ask if there was a standard shelf life for these powders?

A I did not.

Q Do whey protein isolate powders have shelf lives, to your knowledge?

A Yes, they do.

Q Do you know what those shelf lives are?

A It depends what temperature you store them at.

Q Okay.

A So I have whey protein isolate powder I've used in my research and I've used it for quite a

number of years, and I store it in a freezer at, like, minus 80 degrees centigrade.

Q Oh, wow.

A You know, and it's very stable and repeatable.

Q Okay.

A You know. But that wouldn't be required if it was in crystalline form, but -- which is impossible, of course.

Q Okay. Let's shift gears and look at your declaration, please, paragraph 141 on page 70. Here you're discussing how you replicated beverage compositions described in Nielsen 450's Examples 11 and 12.

A Yes.

Q And the reasoning behind your repeating them was that Nielsen 450 Examples 11 and 12 do not state how much denatured protein was in the beverages, correct?

A That was one of the reasons I used for repeating them.

Q Was there another reason?

A The -- as I -- so I'm going to have to just recall, all right, with this. You know, there's several issues. One was what's the particle size distribution of the material, and

that was relevant in the 860 patent for the Claims 18, 19, and 20 where they were talking about particle size distribution.

Q Uh-huh.

A I don't think we had the data on that for every solution that we might be interested in. It would mean they -- like lip- -- with lipids, without lipids.

Q Okay.

A All right. The 50 percent protein denaturation data was absent in the 450 patent, but it was in all the preceding patents. And then, yeah, there was -- there were more than one reason why -- why I wanted to go and repeat these experiments. The -- the other -- the other one was that Leprino's denaturation test, which really is solubility test, uses pH 6.8 and 4.6. And the one that Arla used uses pH 7.0 and 4.6. Okay. So as a scientist you would know that that's not -- doesn't mean anything, but a lawyer might make a beef out of that, difference between pH 6.8 and pH 7.0, so I said let's just use the Leprino test.

Q Okay.

A That way there's no -- nobody can argue that we

didn't do the Leprino test, and the differences, however negligible they would be scientifically, they could make a big beef out of that. So that was another reason we did that.

Q Okay. In this paragraph you say you used the same procedure used in the 860 patent.

A Yeah.

Q Actually --

A Which paragraph are you talking about?

Q 141. What did you -- what was your basis for that statement? What were you looking to for the same procedure?

A Okay. I'm just trying to answer your question.

Q Okay.

A I'm not trying to be -- what did you call that?

Q It's fine. Go ahead.

A Yeah.

Q Just go ahead and answer.

A So could you -- could you again please tell me which sentence you're talking about?

Q Yes. It's the first sentence.

A Is it page 70?

Q Correct.

A Section 141?

Q Correct. First sentence there.

A I decided to replicate the beverage compositions described in the Nielsen 450's Example 11 and 12 to determine the degree of denaturation and heat-treated whey protein beverages using the same procedure used in the 860 patent.

Q Correct.

A Okay. What's your question about that?

Q So what did you mean by using the same procedures? What procedures are you talking about --

A Oh, okay.

Q -- there?

A So I went straight to the 860 patent where they described how they did the solubility test or protein denaturation test. It is on basically Column 15 and leading up to Column 15.

Q Column 15 of Exhibit 1,001?

A Yes.

Q Okay.

A And then I'd like to refer you back to my declaration.

Q Okay.

A Okay. And there's that -- that picture with

the beakers.

Q Page 88.

A Yeah, page 88. And do you see the equation that -- the bottom that I told you that there was the term "1 minus" in brackets was missing?

Q Yes.

A And do you see the -- in Column 15 the term "DWP" is 1 minus the term in brackets?

Q Yes.

A That's the same equation.

Q Okay.

A I used this equation. I took that from the Leprino method. So when I say in my declaration that I used the methods from Leprino, you can see right there verbatim there's a cut and paste from the Leprino patent into my declaration. We faithfully followed that procedure. And, in fact, you can see in the top of Column 15 in this third sentence, says, "Placed a beaker on the balance, bring the weight of the solution to 50 grams," all right, and then you look at the table here and it says add 25 grams, and then it says adjust weight to 50 grams. That's exactly taken from the Leprino patent procedure. Then it says

centrifuge at 10,000 RPM. It says 10 -- centrifuge at 10,000 RPM for 15 minutes at 10 degrees C. And in my declaration it says 10,000 RPM at 10 degrees C for 15 minutes.

Q Okay.

A This is verbatim taken from the Leprino 860. And so when I say in here that we used the Leprino method, you can see I tried to exactly duplicate, in fact, much of it I just cut and paste, and I did it the Leprino way.

Q Okay. Let's look at Example 11 in the 450 patent. In Nielsen 450, rather.

A 450. And Example 11. Could you please help me with what page that's on?

Q That's 109.

A Page 109, Example 11, right. And that is the ones without lipid. Yup.

Q Okay. Actually, the top of page 111.

A Okay.

Q Sorry for this. You can see there's a reference to -- on line 7 it says, quote, "Water and lipid were equilibrated at 70 degrees C in a water bath. 2 percent Grindsted citrem LR10 was dissolved in the heated oil" --

A Yeah.

Q -- "and then slowly mixed with preheated water," unquote.

A Yeah.

Q What is Grindsted citrem LR10?

A Yeah. I wondered that myself. Grindsted is a town in Denmark not far from the Arla facility, and they make ingredients that are used in the food industry. And citrem 110 is a citric acid ester that is used as an emulsifier for water and oil emulsions.

Q So is that an important part of the process?

A Well, yeah, because just like the cream rises to the top of a whole milk if you don't homogenize it --

Q Yeah.

A -- the -- the canola oil will just float on the top of the water if you don't add an emulsifier.

Q Okay. Could you turn to paragraph 182 of your declaration, please?

A Did you say 182?

Q Correct. Paragraph 182.

A Oh, paragraph. Sorry. I didn't know it was that long.

MS. KAISER: I feel like I'm drowning

in this sea of paper.

THE WITNESS: What page is that on?

BY MR. KRIEGER:

Q Page 95.

A It must be on page 92. Okay. Got it.

Q Okay. So here?

MS. KAISER: Hold on. Give me a second.

MR. KRIEGER: Sure. Take your time.

MS. KAISER: Page 95.

MR. KRIEGER: Yes.

MS. KAISER: Okay.

BY MR. KRIEGER:

Q So in paragraph 182 --

A Yeah.

Q -- you're talking about -- and I believe this is your replication of the experiments --

A Yeah.

Q -- that we just discussed and you say four lines down, quote, "Approximately .02 grams of Grindsted citrem LR10 emulsifier was dissolved in heated oil and contains."

Do you see that?

A Yeah.

Q So you used .02 grams of Grindsted citrem

whereas Example 12 specified .2 grams Grindsted citrem. Why is that?

A Okay. So I have to look back at how much it is, the total volume, and so we have to go back to the 450 patent. We were talking about example -- there it is. It's on page 111. And it says in here "0.2 percent Grindsted citrem."

Q Correct.

A Do you see that?

Q Yes.

A And what you're referring to says 0.02 grams of Grindsted. And .2 percent is different than .02 grams. Percent is a ratio times 100. And .02 grams is a -- is a mass.

Q Okay.

A The units don't match.

Q In the following sentence you say .02 percent -- of your declaration at paragraph 182, page 95.

A Yeah. So let me -- so there's 10 grams, .02 grams, so the percent is .02 grams divided by 10 times 100. You can do the math.

Q Well, I'm looking at the number you provided in your declaration, sir.

A Well, I'm looking at the numbers in the

declaration too on page 95.

Q Right. And you indicated you provided .02 percent LR10.

A Well, but you look right above that, it says there's .02 grams in 10 grams and so that's .02 divided by 10 times 100, which is 0.2 percent.

Q Okay. So you're not saying that you put .02 percent LR10 in this example?

A I'm saying I put .02 grams in 10 grams, which is 0.2 percent, which exactly matches what you referred to in the 450 patent.

Q Right. I guess where my confusion is where you mention the percentage in paragraph 182 I would have expected you would have put .2 percent, not .02 percent.

A Yeah. I must have made a typo.

Q Okay. Well, I mean, that's the source of the confusion, so --

A Yeah.

Q -- you're saying --

A I mean, you can easily clarify it because there's two numbers that are in units of grams that work out to .2 percent and referring to Example 12, which contains 0.2 percent.

Q Okay. I was just --

A So the only number that is clearly different is the 0.02 percent, which is obviously a typo.

Q Okay. So it's your testimony here today that there's an error in paragraph 182 and your reference to .02 percent should actually be .2 percent; is that correct?

A On page 95.

Q Yes.

A Yeah. That's a typo.

Q Okay.

A I didn't notice it until you pointed it out.

Q That's okay. I just wanted to understand what was going on there. Thank you.

A It's not so late in the day that I don't do math in my head. I'd like to take a break if you don't mind.

Q Okay.

A Okay. Thanks.

Q Yup.

THE VIDEOGRAPHER: Off the record at 4:19 p.m.

(Short break was taken.)

THE VIDEOGRAPHER: We're back on the record at 4:27 p.m.

BY MR. KRIEGER:

Q All right. Dr. Etzel, let's turn to paragraph 216 in your declaration. It's on page 110.

A Yes.

Q Okay. Here you mention that you used routine homogenization in connection with -- I'm sorry -- well, you said that you used homogenization in connection with Sample 6. Do you see that?

A Yes.

Q What is homogenization?

A In the dairy industry?

Q Yes.

A Yeah.

Q Thank you.

A So milk homogenization is when they -- like if you have milk that is just from the cow, the fat rises to the top and then you have skim milk at the bottom, all right, and people don't like that. That's not common anymore. And so they homogenize the milk to emulsify the fat into smaller particles that don't rise to the top and are stable in the store in a carton, so milk homogenization, you know, although we think we can't imagine milk without it, at one time that wasn't true. Milk would come to your

doorstep and it would be not homogenized and you'd have fat at the top and you had to skim it off yourself. Yeah. And so -- so now milk homogenization is common in every dairy plant all over the world, and this milk homogenization is -- is a conventional common equipment available in dairy plants and research labs such as Arla all over the world.

Q Okay.

A That's what I mean by this.

Q And what exactly is the homogenization process? What happens?

A Oh, okay. It's -- it's what in science we call a colloid mill, all right, and it's where you -- at high pressure you force the milk through a small metal orifice and that shears it and breaks the fat into small particles.

Q Okay.

A Sometimes they use even two stages. They'll have like a first metal orifice. It's a metal plate with a hole in it. And at high pressure they push the liquid through, and sometimes you have like a first stage and a second stage.

Q Okay.

A The first one started as like it breaks the fat

into small particles, and then the second one breaks it in even smaller particles.

Q All right. So you talk about Sample 4 and Sample 6 in this paragraph.

A Uh-huh.

Q And you mention that the particle size as you observed in Sample 4 were relatively large.

A Yeah.

Q Indicating detection of coalescing lipid droplets. And then it indicates that you used conventional dairy homogenization. Is that a way to reduce the particle size?

A Conventional dairy homogenization?

Q Correct.

A Yes.

Q Now, when you do dairy homogenization, is it -- is it fair to say that there are different conditions for homogenization that you could employ?

A Yes. I would say that's true in general, but the details matter. Each -- each dairy plant will have a different manufacturer for their equipment and they might operate it slightly differently, but, you know, because it's a commodity product, really, milk, and

homogenization is done with all milk all over the world, including in Denmark. They're going to use equipment that might even be made in the United States, and the -- and that the range of equipment used and the way they operate it, the more it's a commodity like that, the less the range is.

Q Okay. But isn't it true that you could run a homogenization process longer or more vigorously and result in smaller particles than if you ran it for less period of time, less vigorously? Does that make sense?

MS. KAISER: Objection to form.

THE WITNESS: So I would say that it's more complicated than that simple sentence.

BY MR. KRIEGER:

Q Okay.

A You know, like if you let the machine run for five days would you get a different result than if you let it run for one hour. That's a different question than if I ran it for one minute versus 30 minutes, would I get a different particle size then.

Q Would you?

A And so -- and I'm not an expert on milk homogenization.

Q Okay.

A But I know that after -- that as you break the fat into smaller and smaller particles like that and you're shearing it, basically, at high shear rates, eventually the milk becomes emulsified and you can't make it more emulsified. It's good enough and people don't run it for ten days or one day or something like that.

Q Okay.

A There's a certain window that is enough and less than that is not enough and more than that is not so good, to be too long.

Q What can happen if you do it too long?

A So you can start to -- the -- damage the proteins; the proteins might get sheared. You could -- it's hard on the equipment, and so the equipment shelf -- the lifetime of the equipment could be damaged. That's too long.

Q Now, could you prepare a sample with a desired particle size by controlling the degree of homogenization?

MS. KAISER: Objection to form.

THE WITNESS: So I hear that question as could you control the particle size after homogenization.

BY MR. KRIEGER:

Q No. By -- based on controlling the homogenization process.

MS. KAISER: Same objection.

THE WITNESS: All right. So what I hear you asking me is could you control the particle size produced by a homogenizer by adjusting the conditions?

BY MR. KRIEGER:

Q Of the homogenization process.

A Of the homogenization process?

Q Correct.

A I would say that in the context of this example where you're adding oil to water, basically, with some protein in it, if you ran the machine for one second you would get a different particle size than if you ran it for 30 minutes.

Q So you -- could you control the particle size based on homogenization conditions based on the example you just gave?

A There's probably a place where it doesn't

change that much.

Q Okay.

A And then if you run it like far shorter than that, like one minute, you might not be enough and if you run it for 100 hours it might be too much and you might get actually breakdown of the proteins or something like that, and there's probably a middle range where it doesn't matter that much. If you use 30 minutes versus 20 minutes or 25 minutes, you know, I would guess it might not matter that much. What they're doing here in this one -- homogenization step, they would normally state a pressure and a time, and so I have to look that up.

Q That's okay. Let me just ask a different question here.

A Yeah.

Q How do you know when to stop homogenization?

A I'm not really an expert in this topic.

Q Okay. Well, when you homogenized your samples here, how did you know when to stop? Here in paragraph 216 of your declaration.

A We had a time that we did it for.

Q And what was that time?

A I can't see this little figure very well.

Q Nor can I.

A Yeah. It says --

Q I don't think it indicates time. Who selected the time?

A Tanja knew what they had used in the past.

Q Okay.

A And so she knew what they did in 450 and they duplicated that.

Q Were you monitoring particle size as you were homogenizing?

A No.

Q When was the particle size analysis completed?

A At the end of the homogenization step you take a sample and then you run it through the Malvern laser light scattering equipment.

Q Were there any experiments that you did in connection with your visit to Arla that are not reported in your declaration?

A So there's only one experiment that we repeated where I can't remember if we repeat -- if we reported the one that we made a mistake on and then the one that we repeated when we realized we made a mistake on it.

Q So the one that you made a mistake on is not

reported?

A Okay. I have to find the section where we talked about this --

Q Sure. Go ahead.

A -- in the declaration.

Q I think you're in the patent.

A Oh, this is the patent.

Q There you go.

MS. KAISER: Thanks.

THE WITNESS: Find it there. All right. And so it's back in this section.

BY MR. KRIEGER:

Q Oh, are you referring to paragraph 184?

A All right. Let me look it up. Did you say 184?

Q Correct.

MR. KRIEGER: Paragraph.

MS. KAISER: Paragraph 184.

THE WITNESS: I'm looking. Yup, there it is.

BY MR. KRIEGER:

Q Okay.

A Yeah, we made this labeling error. I realized it right away and then we had accidentally switched the sample. It was kind of my fault,

actually, because the -- while we were doing this experiment I was talking to Peter about just stuff, like I think about United States buying Greenland, and -- and he was doing the experiments and then we made up the solutions and then we adjusted the pH. And the one that we adjust the pH 4.6 was clear and then when the pH 6.8 was cloudy and I'm like, "Oh, my God, we switched the beakers," and I -- and then I said, "Okay. Now what do we do?" And that was big bad day for me because it was my fault, really, because I was engaging in this conversation that had nothing to do with the work that we were doing, and so we got, I'd say, just distracted. And so I said, "There's -- something's wrong here. I think we switched it." And then he was like, "Oh, no, we're going to have to go and repeat everything, which is like three days of work and my flight leaves tomorrow. What are we going to do?" And so then he said, "No, I think we have enough liquid left in the original bottles to actually just repeat that part of the experiment. We don't have to do the stuff that you did before with Tanja. We

can just repeat this Leprino test part" --

Q Okay.

A -- "for denaturation," and he was right. We could take the samples and just pipe that new samples out and follow this procedure with the beakers in it and repeat it. So now the problem is that he had -- we have to submit that to the lab for Kjeldahl analysis, and we had gotten -- he has a friend over there who moved our samples to the front of the line.

Q Okay. So are there any other examples or experiments that you ran that are not reported in your declaration?

A No.

Q Okay. Are you familiar with the term -- I'm going to mispronounce it -- Maillard browning?

A I am.

Q Okay. What is that?

A That is the reaction between reducing sugars and proteins that make proteins turn brown.

Q Okay. And is that a factor that you considered in your -- your study in connection with this matter?

MS. KAISER: Objection to form.

THE WITNESS: Considered when?

BY MR. KRIEGER:

Q Well, the samples that you were using were more than seven years old; is that correct?

A Yeah. Right.

Q Okay. So in connection with the aged samples that you were using, did you consider Maillard browning as being a possible concern?

A There is no way it happened because Maillard browning makes the powder brown.

Q Okay.

A These powders were as white as snow.

Q Okay.

A In addition, there are BLG crystals, and I said that the crystalline proteins are inherently stable. Even Eli Lilly knows that, and that's why they make human insulin in crystalline form. So when you see a powder that is white as snow there is no browning.

Q Could there be any Maillard browning that's within the particles that hasn't, perhaps, risen to the level of browning yet?

A Well, when you'd dissolve it in water you'd see the water's not crystal clear and colorless.

Q And it was in your case?

A It was crystal clear and colorless. There

was -- there was no reason -- well, there was every reason to believe that there was no Maillard browning in this.

Q Is there a way to test for Maillard browning aside from looking at it?

A Usually people use color.

Q Okay.

A Brown color is the hallmark of Maillard browning. The other thing is that the lactose content of these powders is zero and crystals don't have any lactose in them.

Q Uh-huh.

A So how is there going to be Maillard browning without -- if you've got Reactant A reacts with Reactant B but B is missing, how do you get a reaction? Basic chemistry would tell you that's not -- it can't happen.

Q Okay. Let's go ahead and take a break.

MS. KAISER: Sure.

THE VIDEOGRAPHER: Off the record at 4:44 p.m.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record. This will mark the beginning of Media Unit Number 7 of the video-recorded deposition

of Mark Etzel. Today's date is April 3, 2026. The time is 4:55 p.m.

BY MR. KRIEGER:

Q All right. Dr. Etzel, let's turn, please, to page 152 of your declaration.

MS. KAISER: Page or paragraph?

MR. KRIEGER: Page 152.

MS. KAISER: Thank you.

BY MR. KRIEGER:

Q A lot of pages.

A Yeah.

MS. KAISER: There you go.

THE WITNESS: This is 152, yeah.

BY MR. KRIEGER:

Q All right.

A Okay. Got it.

Q So I want to talk about Limitation 8.7. You can see that here.

A Okay.

Q It recites, quote, "Greater than 50 weight percent denatured whey proteins" --

A Yeah.

Q -- "relative to the total weight of the protein in the denatured whey protein composition," unquote. Let's look at paragraph 287 now of

your declaration.

A Okay.

Q So here you state, "It would have been obvious to combine LeanCreme with a WPPC of Ozturk" quote, "to achieve at least 75 weight percent denatured whey proteins," unquote. I was just curious, what was the origin of the quote "at least 75 weight percent value"?

A I'd have to look at the LeanCreme reference to figure out why the 75 percent is in there.

Q Well, as a matter of fact, we have a copy right here.

A Excellent.

MS. KAISER: Thank you.

BY MR. KRIEGER:

Q So I'm handing you what's been marked as Exhibit 1,010, the LeanCreme reference. You recognize this document, correct?

A Yes.

Q Okay.

A Yes. I see on page 7 --

Q Yes.

A -- of this document that they say up to 75 percent of the protein can be microparticulated, and the microparticulated

protein is the denatured protein.

Q Okay. And in this case the term "microparticulated," is that used interchangeably with "denatured"; is that right?

A It's a little bit -- it's like if you flip them back and forth it's -- they have different meanings, so -- so you can say that microparticulated protein consists of denatured protein.

Q Okay.

A But denatured protein isn't necessarily microparticulated.

Q But in this context you're equating microparticulated as being denatured; is that fair?

A The microparticulated protein is denatured protein.

Q Okay. Isn't it true that this section of LeanCreme that you just quoted at the top of page 7, that that doesn't say at least 75 percent, does it?

A It says up to 75 percent?

Q Right. That has a very different meaning, doesn't it?

A It means up to 75 percent instead of exactly that number 75 percent.

Q Correct. But your declaration says at least 75 percent. Isn't it true that up to 75 percent and at least 75 percent have very different meanings?

A Hmm. Hmm.

Q I mean, do you agree?

A I'm puzzled by even the question, because I'm not seeing what you're getting at.

Q Well, your declaration testifies that -- you say in paragraph 287 that it would have been obvious to apply the LeanCreme denaturation step to the GMP-depleted WPPC to achieve at least 75 percent.

A Oh, I see what you're saying. Yeah.

Q And that's not what LeanCreme says, is it?

A Yeah. You're saying up to 75 percent is different than at least 75 percent.

Q Correct.

A Yeah.

Q Isn't that a true statement?

A Yeah. Yeah.

Q How are they different?

A How are those two statements different?

Q Correct.

A Yeah. And so when I read this to achieve at least 75 percent -- weight percent denatured whey protein relative to the total weight of protein, it means that 75 percent or greater.

Q Correct.

A Yeah. That's what that would mean, you know, scientifically.

Q And what does up to 75 percent mean scientifically?

A Yeah. 75 percent would mean 75 percent or -- or less.

Q Okay.

A You know, that's what I -- that's how I would think about it scientifically. But I don't know if that's the origin of this at least 75 percent statement here, because in paragraphs 287 it doesn't say where that number came from. I just -- you gave me this document and I haven't had time to read it, and I saw a 75 percent in there.

Q Okay. Well, you do not include a citation here in this --

A Yeah. This document --

Q Paragraph --

A Yeah. You know, when it refers to the APV LeanCreme denaturation step I'd have to reread this again to see if they have any information that would indicate what percent of the protein -- it says more prominent --

Q Yeah. What I can tell you --

A Yeah.

Q -- is, if I word search "75" I cannot find the words "at least 75 percent" anywhere.

A Yeah. Yeah. I see that on page 9 it says, "There may be 1 percent microparticulates, low or no denaturation, or 70 percent microparticulate, high denaturation." And so that's up to that -- you can see on page 9.

Q Okay.

A And, yeah, I don't know why I didn't say 50 percent because that's the whole topic here.

Q You cited to Figure 2 in a previous paragraph in connection with a similar statement that appears to use the correct "up to 75 percent" language.

A Okay. Figure 2.

Q That's paragraph 286. I think we don't need to belabor this. I mean, if this is an error in your declaration we can just make a note of it,

but...

A (Reading sotto voce.) Then it has Example 1010, 7, and 15 whey protein calculation affects -- quote, "Up to 75 percent of the protein could be microparticulated," which is what you said. Then you found in the APV LeanCreme. And then it says after that -- it refers to the 75 percent later on. Yeah. So I -- I think probably should have said "up to."

Q Okay.

A Yeah.

Q So that's just an error in paragraph 287 that the phrase, quote, "at least 75 percent" --

A Yeah.

Q -- unquote, should say "up to 75 percent." Is that correct?

A Yeah. Yes.

Q Is that correct?

A That's what I would say looking at it here.

Q Thank you.

A 50 percent is -- up to 75 percent includes 50 percent, which is what this claim has, and so this whole thing falls under the claim in the Leprino patent that refers to 50 percent, greater than 50 percent denatured whey protein,

all right, and so up to 75 percent includes the 50 percent, which is what Leprino says, is greater than 50 percent, and that's what I was after is to say, all right, up to -- having 50 percent denatured whey protein -- greater than 50 percent denatured whey protein is obvious from the APV LeanCreme document because they went all the way up to 75, not 50.

Q So let's talk about that. The LeanCreme reference that we're talking about and specifically with reference to Figure 2 --

A Uh-huh.

Q -- lists several whey proteins, correct?

A For reference to Figure 2. I'm looking and I see a Figure 1 and I see a Figure 2 is the typical composition of whey proteins in sweet whey.

Q Correct. And those are the ones that are being referenced in connection with the 75 percent?

A Yes. That's true. Yeah.

Q All right. So all of the proteins they're talking about are whey proteins, right?

A Oh, yeah. Sure.

Q Okay. Would you agree that GMP and NPN -- do you know what I mean by "NPN"?

A Yup.

Q -- cannot be denatured and that alpha-lactalbumin can only be partly denatured? Do you agree with that?

A I do not agree with that, because you have made it into a black-and-white issue when you say "cannot."

Q Well, I'm quoting language from LeanCreme.

A Yup.

Q On page 7 in the top left paragraph.

A Okay.

Q So that's what it says.

A Yeah.

Q So I didn't make that up. Do you disagree with that statement?

A You know, that statement in -- in qualitatively is definitely true.

Q Okay. And what do you mean by "qualitatively," presumably, versus quantitatively?

A Like you could -- right. Exactly. You know, so you could say, yeah, a Ferrari is faster than a Mustang, you know, but -- and that might be qualitatively true. But quantitatively the details matter and so, you know, this is sort of a -- when you put that "cannot" in there

it's like -- it's hard to prove a not.

Q Understood. In absolutes.

A Yes.

Q Okay.

A It's hard to prove in absolutes. So the red flag for me in that sentence is the "cannot" word.

Q Okay.

A All right.

Q So looking --

A If they had said generally cannot.

Q Looking again at Figure 2 of LeanCreme --

A Yeah.

Q -- you can see it shows their sweet whey contains 48 percent BLG. Would you agree?

A That's right.

Q 14 percent ALA?

A Correct.

Q And 16 percent GMP.

A Correct.

Q So there is less BLG and more GMP -- well, strike that.

Isn't -- isn't it true that LeanCreme is limited to discussing whey protein denaturation?

MS. KAISER: Objection to form.

THE WITNESS: It's been a while since I --

BY MR. KRIEGER:

Q Take a look -- by all --

A Do you want me to read the whole thing?

Q I mean, it's a short document and you've already reviewed it prior, so, but by all means if you need to skim it, by all means --

A And what you're asking me to skim it for is does it refer only to whey protein?

Q Is it limited to whey protein?

A Yeah. Limited to whey protein.

Q Limited to denaturation of whey proteins.

A So if you look on page 5 under the section "Chemistry and Physics" they say, "Raw material for LeanCreme is whey concentrate WPC from cheese production or from microfiltrated milk, DOA." All right. And so they're saying that it's -- it's not just cheese whey from a cheese vat, but this milk that's been microfiltered and would contain some casein, which is not a whey protein.

Q Okay.

A And so they've immediately identified it as not

just limited to whey proteins.

Q Do they discuss denaturation of casein at all? Because my original question is isn't it true that LeanCreme is limited to the denaturation of whey proteins?

A Right. So if you don't mind if I keep reading it.

Q Okay. All right. We're going to have to move on. I know -- I appreciate your -- your effort in looking through it. I just -- we can't read the whole document, unfortunately. We just --

A So I can tell you what I know so far.

Q Okay.

A So this article is primarily referring to whey proteins, but because they have that one sentence says "identified" that I found, they're also talking about a stream that contains casein in it, so it doesn't -- it's not -- it's absolutely only used for whey proteins.

Q Got it. Got it. But, again, at least -- I mean, subject to your further review and I appreciate that you have not just now read the entire document and I'm not allowing you time to do so.

A Yeah.

Q But based on what you've seen so far in the document, it appears that the document in terms of denaturation is limited to whey protein denaturation?

A Okay. So --

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Is that correct?

A So you're asking me to answer that question without allowing me time to read the whole document.

Q You can say subject to your not having time to read the entire document now. And if you're unable to answer, that's fine.

A Can I get, like, just a few more minutes to look --

Q We're going to have to move along.

A I'm almost done.

Q Okay. All right. I mean, it's 30 pages long.

MS. KAISER: If you want to withdraw the question, I'm not going to object to that. It's up to you.

BY MR. KRIEGER:

Q If you can't answer it, I'll move on.

A I can answer it, but you're forcing me not to have enough time to read it.

Q I am -- I am asking -- I'm asking for an answer now, and if you can't answer, that's fine. Just say so.

A So you're asking me if you can't answer without me letting you read it.

Q Correct.

A And the reason I'm looking through this is that in the very end of this on page 19 they say the most well-known use of LeanCreme is semi-hard fresh and soft cheeses.

Q Okay.

A So that's obvious that LeanCreme isn't just used for -- for whey protein. It's -- it's a straight surface heat exchanger, and the heat exchanger has a rotator in the middle that rotates and it shears everything, and they're not going to make it just for one product. They're trying to sell it for everybody can use it for anything.

Q Got it.

A And here they even say, well, you can use it for cheese.

Q I understand, but the question's related to

denaturation. I'm going to move on.

At the top of page 7 of LeanCreme, the section you just quoted a moment ago, based on that --

A Are you still back on the LeanCreme or --

Q Yes.

A Oh, okay. I thought we were done with this.

Q No. No. Page 7 of LeanCreme --

A Oh, okay.

Q -- where you were just quoting at the top of that sections?

A All right.

Q Based on what's indicated here in connection with GMP and NPN generally not being able to be denatured and ALA only being partially denatured, is it fair to say that the denaturation amount differs based on a specific whey protein composition? Would you agree with that?

MS. KAISER: Objection to form.

THE WITNESS: So this Table 2 is the typical composition of whey proteins and sweet whey, all right. The crystalline BLG powder would be like 100 percent BLG.

BY MR. KRIEGER:

Q Are you saying Figure 2?

A Figure 2.

Q Okay.

A Did I misspeak?

Q You said Table 2. It's fine.

A I'm sorry. Figure 2. And so -- but if I -- but if you had a GMP powder that's 100 percent GMP or 98 percent GMP the pie chart would be different and that would have a different level of denaturation than whey protein.

Q And that would not denature nearly to the extent?

A Not much, yeah. I mean, I can't say none. "None" is a strong word. But it would -- if it was pure GMP and it says here, "cannot be unfolded and denatured." They shouldn't use these words, "cannot," stuff like that, because it's hard to say that, like I never make any mistakes.

Q Sure. So --

A And so if this was pure GMP and they fed it to this, it would not denature nearly as much as the whey protein that's shown in the pie chart in Figure 2.

Q Okay. So --

A But if it was crystalline BLG, which is 100 percent roughly BLG, it would denature more than the pie chart in Figure 2.

Q Got it. Understood. But based on that, those examples you just gave, it's true then that the denaturation amount differs based on whey protein concentrations, correct? Whey protein compositions, correct?

A I would say yes.

Q Okay.

A Yeah. I'm going to need a break again. Sorry.

Q Okay. Do you need one now?

THE VIDEOGRAPHER: We'll --

THE WITNESS: I might like to take a break now.

THE VIDEOGRAPHER: Off the record at 5:17 p.m.

(Short break was taken.)

THE VIDEOGRAPHER: We're back on the record at 5:27 p.m.

BY MR. KRIEGER:

Q Okay. Dr. Etzel, let's look again at Ozturk. That's Exhibit 1,008 we looked at earlier. I'd like to turn back to Figure 1, please.

A Okay.

Q Okay. We talked about this at length earlier --

MS. KAISER: I'm sorry. I lost the -- oh, there, it's back. Sorry. The real-time went away. Apologies, Justin.

BY MR. KRIEGER:

Q We can see that there's a box that says "Whey." Do you see that?

A Yes.

Q Okay. And sweet whey would be considered whey in this chart, correct?

A Yes.

Q Okay. And the sweet whey would be filtered, as shown here, into WPC and a whey permeate; is that correct?

MS. KAISER: Objection to form.

THE WITNESS: Could you say that one more time?

BY MR. KRIEGER:

Q Yeah. It was -- the question was just if you have sweet whey here for the whey as shown in Figure 1, it is separated through a filter process into WPC and whey permeate. Just taking terms from Figure 1. That's correct, right?

A Well --

MS. KAISER: Same objection.

THE WITNESS: Yeah. So the problem is that you're saying that the box -- information box that says whey small globules is sweet whey. That's what your implication is.

BY MR. KRIEGER:

Q Well, is it or is it not?

A It's not. It's not, because sweet whey is what's drained off the cheese vat when you separate the curds from the whey like Little Miss Muffet, all right, and then it goes through a cream separator, and I would say that what's in that box is -- is separated sweet cheese whey. That's different.

Q So is that separated cheese whey that you just mentioned the same as WPC or is that different?

A Well, WPC is different.

Q Okay. Are you suggesting that the figure that's shown here, Figure 1, doesn't apply to sweet whey?

A Of course it does.

Q But if you had sweet whey here would it not form a WPC?

A All right. I'm just trying to be really clear here --

Q Sure.

A -- and accurate, and you said look at that box that says "Whey" on it and you called that sweet whey, and I said no, it's not sweet whey because sweet whey is what comes off the cheese vat and after it goes through the cream separator it's separated.

Q Sir, that's not what you said. You said "Correct." You agreed with me.

A All right. So now I don't know what you're talking about. You're going to have to replay what you said, what I said.

Q I'm not going to replay it, but the testimony is there. I'll start over again because I want to make sure we get this right. Could -- could the sweet whey be used in the process shown in Figure 1?

A That's a different question than the one you asked before.

Q Can you answer it?

A So the new question is could sweet whey be used in the process of Figure 1?

Q Correct.

A Yes.

Q Where would the sweet whey be if it were used in this process of Figure 1?

A Okay. It would be in the line between cheese vat and cream separator.

Q Okay. And then after the whey cream is removed would you then have whey?

A Then it would be called, technically speaking now, separated sweet cheese whey.

Q Okay. They don't call it separated whey here. They just call it whey.

A I know. Because that's -- that's -- it's actually shorthand language.

Q Okay. Well, using shorthand is it fair to say that you would have whey there or no?

A Well, it says whey in the box.

Q No. If you used sweet whey as the starting material.

A All right. If you use sweet whey as the starting material that would be the line that comes off the cheese vat --

Q Okay.

A -- that goes down into the cream separator, and what you would have after that is separated sweet whey.

Q Okay.

A And that's what goes into the box that's labeled "whey" for shorthand, so to speak, and, actually, it should be labeled, to be technically correct, separated sweet cheese whey.

Q Okay. So --

A Or separated sweet whey.

Q If you had separated cheese whey --

A Yeah.

Q -- in that box labeled "Whey" --

A Yeah.

Q -- and it went through the filter, the UF filter, would it form a WPC and a whey permeate?

A And that's according to this diagram, you mean.

Q Yes. I'm just asking if that's what would happen.

A Yes.

Q Okay. And then the WPC would be filtered through a microfilter to make WPPC and WPI; is that correct?

A Yes. That's what this diagram shows.

Q Okay.

A And in Figure 1.

Q As we discussed earlier, I think, it is correct, isn't it, that WPPC is a high-fat composition. Would you agree with that?

MS. KAISER: Objection to form.

THE WITNESS: Yeah. So there's a legal standard for what WPPC is in fat content. I think it even says in this article.

BY MR. KRIEGER:

Q So there's a minimum fat content?

A There's a range.

Q For WPPC, correct?

A For WPPC, yes. Yes. And I -- you know, the USDA sets that definition.

Q And is that lower limit, the minimum amount of fat to qualify as WPPC, is that 12 percent fat on a dry basis? Does that sound right?

A It does sound right, but where did you find that number?

Q It's actually listed down below the figure.

A Okay.

Q In reference to the American Dairy Products Institute?

A Oh, yeah, there we go. Good.

Q Okay.

A Consists primarily of whey protein and 12

percent fat dry basis. Right. So that's the minimum that needs to be in there, and the dry basis gets back to this discussion we had before about what's dry basis versus --

Q Okay.

A -- total basis.

Q So, again, the question was is it fair to characterize WPPC as being a high-fat composition in view of the minimum 12 percent fat content required by the ADPI?

A Yeah.

MS. KAISER: Objection to form. And if you could wait and let me still make my objections. Thanks.

THE WITNESS: Sorry. All right. So could you please state that again? I'm having -- it's late in the day. I'm tired.

BY MR. KRIEGER:

Q Is it fair to characterize WPPC as being a high-fat composition in view of the minimum 12 percent fat content required by the ADPI?

MS. KAISER: Objection to form.

THE WITNESS: So here is -- so, you know, before you said that I was not answering your questions and used some phrase for that,

and I'm not trying to do that, really, but --
BY MR. KRIEGER:
Q Just -- you can answer. Yeah. I don't need the preamble --
A But you say these questions like that, you know, then I'm -- I'm thinking wait a minute. So you're saying is 12 percent fat dry basis a high-fat composition. Yeah. And there's actually a legal standard for what is considered high fat. So if you look at, like, milk, there's reduced-fat milk, there's 2 percent milk, there's 1 percent milk, there's skim milk. They all have different fat contents, and so the food industry has definitions of what high fat is. And that's different than just saying, well, it's 12 percent fat so that's high fat.
Q What is the standard for what is high fat?
A So it depends on the food product and so -- you know, and -- and high fat is imprecise language.
Q Okay. So you --
A Because it's high relative to what?
Q So you would not -- you can't answer that question then because --

A I think it's -- it's an ill-defined question.

Q Can you answer it qualitatively?

MS. KAISER: Objection to form.

THE WITNESS: What are you actually trying to learn here? Because we know it's -- it's got to be -- it looks like a minimum of 12 percent fat based on this ADPI definition and so you know that, so why are you trying to force that into a box of high fat, very high fat, low fat?

BY MR. KRIEGER:

Q Well, let's look at it by way of comparison. Would you agree that WPPC has a higher fat content than WPC and the whey permeate and WPI?

MS. KAISER: Objection to form.

THE WITNESS: So it's -- WPPC is 12 percent fat dry basis.

BY MR. KRIEGER:

Q Minimum.

A Yeah. Minimum. And then you're saying is that different than WPC?

Q No. That's not what I asked. What I asked is would you agree that WPPC would be expected to have a higher fat content than WPC, whey permeate, and WPI?

MS. KAISER: Objection to form.

THE WITNESS: So based on just my knowledge off the top of my head I know that WPI as a product is -- contains less than 12 percent fat and I know that whey permeate contains little protein or little fat, but WPC, the starting material to make the WPPC, it depends on the type of cheese it is, and so some cheese, you know, like gouda cheese or gouda cheese, that's a high-fat cheese, and some cheese like mozzarella skim cheese is a low-fat cheese. And so the fat content of the whey is going to be different. And here you have a cream separator that's going to change the fat content. And so it's one of these ill-defined questions.

BY MR. KRIEGER:

Q Okay.

A Because if you had cheese whey, sweet cheese whey, that didn't have a cream separator in it or you had cheese whey from a gouda cheese plant, they're going to have different fat contents than mozz cheese whey that went through a cream separator. And then if you make WPC from those, they might actually

contain more fat than the WPPC that's shown in this diagram.

Q Would you agree that WPI is a low-fat and relatively high-protein composition?

MS. KAISER: Objection to form.

THE WITNESS: WPI is generally a high-protein composition that contains less fat than, say, most WPP -- WPCs.

BY MR. KRIEGER:

Q So do you agree with the statement or no?

A So your statement again?

Q Is that WPI --

A Yeah.

Q -- is relatively low-fat and relatively high-protein composition.

MS. KAISER: Objection to form.

THE WITNESS: I -- I agree with that.

BY MR. KRIEGER:

Q Okay. So in view of what we discussed earlier about how different protein contents can lead to different denaturation levels -- a moment ago we talked about that -- based on their different protein contents isn't it true that you would expect the twice-filtered WPPC, which contains only residual proteins, to denature

differently from sweet whey?

MS. KAISER: Objection to form.

THE WITNESS: Boy, there's a lot of things that you put in that sentence and the preamble that I might not agree with.

BY MR. KRIEGER:

Q Well, you did earlier because we talked about the sweet whey proteins, right?

A Yeah.

Q And in LeanCreme?

A Could you read your sentence back.

Q We went through three examples and you agreed that they would denature differently. Do you recall that discussion?

A I don't know which one you're talking about.

Q Okay.

A We've been talking for six hours.

Q We'll set that aside. We'll set that aside. The question is based on their different protein contents isn't it true that you would expect the twice-filtered WPPC, which contains only residual proteins, to denature differently from sweet whey?

MS. KAISER: Objection to form.

THE WITNESS: Yeah, it's one of these

things where it's, like you say, the WPPC which contains only residual proteins. You said that.

BY MR. KRIEGER:

Q That's what it says in Figure 1.

A Yeah. Which contains only residual -- no. It says it -- it says it contains small globules and residual proteins. Doesn't say only residual proteins.

Q Well, in terms of proteins it's -- okay. Fine. I'll rephrase the question if you would like to remove the word "only."

A All right. Thank you.

Q Based on their different protein contents isn't it true that you would expect the twice-filtered WPPC, which contains residual proteins, to denature differently from sweet whey?

MS. KAISER: Objection to form.

THE WITNESS: I don't agree with that statement.

BY MR. KRIEGER:

Q So you'd expect them to denature similarly?

A I think it's hard to say because you're comparing the WPPC to something that you called

WPC.

Q No. I was talking about sweet whey.

A Sweet whey. So sweet whey is the starting material.

Q Yes.

A Yeah. And so you're saying is -- is the denaturation characteristics of WPPC different than sweet whey.

Q That's what the question was.

A Yeah.

Q I've asked it like six times. So, yes, that's it.

A Right. But you refined your question.

Q I did refine it, but that was there each time, so --

A Yeah. And so you make it sound like I'm -- I'm listening to you and then I'm just trying to not be cooperative, but then you remove the "only" because you could see why that question was inaccurate. So don't make it seem like I'm not trying to be helpful here.

Q The only proteins that are specified in Figure 1 are residual whey proteins, so I don't -- but I removed it to satisfy you for the question.

A Well, to make it correct.

Q Okay. In any event, can you answer that question or not?

A I can answer that question.

Q Cannot?

A I can.

Q Okay.

A Can answer that question.

Q What's your answer?

A What I would say -- I'm trying to clean up your language.

Q Okay. I appreciate that. I really do appreciate that.

A And so part of my problem is that this is my topic area. I've worked in this for 30 years and of course you haven't and then when you use these words, the words matter, and I'm trying to clean it up a little bit so that I can -- so I can rephrase the question in a way that it can be answered.

Q So you cannot answer the question without rephrasing it; is that your -- is that your testimony?

A Well, we rephrased the "only" part, right.

Q That question is pending. Can you answer that question or not?

A The one without the "only"?

Q Yes.

A Okay. And so your question is -- is comparing sweet whey and how it denatures to comparing WPPC.

Q Correct.

A And WPPC is a product of the sweet whey.

Q Okay.

A So they're connected in that way. They're not different objects like apples and oranges. One is made from the other.

Q I understand that. But they have entirely different protein contents, wouldn't you agree?

MS. KAISER: Objection to form.

THE WITNESS: Well, entirely different is hard to say because one's the son of the father.

BY MR. KRIEGER:

Q So it's your testimony here under oath that it's hard to say whether WPPC has a different protein content than sweet whey?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q I mean, is that your testimony today?

A You're putting words in my mouth.

Q I mean, I'll read back what you just said. I just -- I want to make sure that you understand what you're saying here because what you just said I don't think you agree with.

MS. KAISER: Justin, I think it's a problem of language because you said "entirely different protein contents." If you want to ask him if it has different protein contents then you might be able to get the answer.

BY MR. KRIEGER:

Q Do they have different protein contents?

A Okay. So that's a snippet that you just gave me. Could you rephrase the question without the snippet?

Q Would sweet whey have a different protein content than WPPC?

A Yes.

Q Dramatically different or pretty similar?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Qualitatively?

A Well, dramatically and qual- -- those are opinions.

Q In your opinion.

A In my opinion, okay.

Q You're the expert.

A Just as an individual person alone in the world.

Q As an expert in the field.

A Okay. I would say yeah, they're -- they're going to be different.

Q Okay. And based on those differences would you expect those two compositions to denature differently?

A I'm just trying to think about your question because denature differently is a -- is vague and arbitrary wording. What do you mean by "denatured"? What measure are you using to -- to describe denatured?

Q That the degree of denaturation.

A As measured by the Leprino test?

Q Sure.

A Okay. So I would say that -- that the sweet -- so I'm trying to think how this sentence is now, and it includes by -- measured by the Leprino test.

Q Sure.

A All right. So could we read the whole thing back with that word -- with those words in it? Because right now I'm not sure what the

sentence is I'm responding to.

Q Would you expect sweet whey to denature differently than WPPC, using the Leprino denaturation test?

A Yes.

Q Okay. How?

A How differently? You mean like one's more than the other --

Q Yes.

A -- how? Yeah. And we're comparing sweet whey to WPPC.

Q That's correct.

A Okay. Well, so can I answer the question as that?

Q Just answer however you'd like.

A All right. So, you know, the problem with sweet whey is it's very dilute compared to the WPPC, and the sweet whey contains glycomacropeptide and some of these other proteins that don't denature well whereas the WPC is reduced in glycomacropeptide. The -- the WPC -- -PPC contains lipids, and so those factors are going to make them test differently using the Leprino denaturation test.

Q Okay. Is this a factor that you considered in

your declaration?

A What do you mean by this?

Q The different denaturation degrees of sweet whey versus WPPC in connection with your argument regarding LeanCreme and Ozturk?

A Oh, you're getting back to the up to 75 percent --

Q Correct.

A -- that I pulled out of the APV LeanCreme advertising document. And is this a factor meaning that how well they would -- how sweet whey would be tested differently with the Leprino denaturation test than WPPC? That's what I hear you asking.

Q Yes.

A Okay. I think in general I did consider that, because nobody is going to pump sweet whey through the AP LeanCreme machine.

Q Okay.

A It usually is fed with either this WPPC or a WPC or WPI, and they're not going to feed sweet whey through it.

Q Are all of the proteins in WPPC whey proteins?

A "All" is a -- really one of those 'nother absolute words. "All" and "nothing." And so

I'm thinking about that question and I'm thinking, well, you know, what if the cheese fines aren't completely removed in the cheese separator or the cheese fines come through here and you might find out that there's traces of casein in the WPPC and, in fact, if you look at Ozturk Figure 2 you see a band for caseins.

Q So what's your answer to the question?

A You asked me a question about whether there would -- are all the proteins in the WPPC are whey proteins.

Q Yeah. Are they --

A Casein is not a whey protein.

Q Then the answer is "no." Is your answer "no"?

A Right.

Q Okay. All you have to do is say "no."

A As evidenced in Figure 2.

Q Okay. So not all proteins in WPPC are whey proteins.

A That's right.

Q Okay.

A Yeah.

Q Let's turn to page 291 of Ozturk.

A Table 2.

Q Is it your opinion that LeanCreme discloses

particulating WPPC?

MS. KAISER: Objection to form.

THE WITNESS: Does the LeanCreme paper here?

BY MR. KRIEGER:

Q Yeah.

A You mean mention WPPC? That's what I hear you saying.

Q No. Does it disclose particulating WPPC?

A In the LeanCreme --

Q Correct.

A -- advertisement here?

MS. KAISER: Same objection.

THE WITNESS: I'd have to -- you know, it's been a while since I read this. We went through this before when you asked me a question and I said I'd have to read it and then you said I don't have time for you to read it.

BY MR. KRIEGER:

Q I withdraw the question.

A Okay.

Q I withdraw the question. If you can't answer it without reading the paper, I'll withdraw the question.

A Thank you.

Q Okay. Okay. So going back to page 291 of Ozturk.

A Ozturk, okay.

Q Can you see there's a list -- there's a Table 2 here and there's a list of proteins in the far left column. Do you see that?

A Yeah.

Q And three of them are bolded and I wanted to start at the bottom. It mentions other proteins. Do you see that?

A Yes.

Q Do you know what those other proteins are?

A Could I point out something in this Table 2.

Q After you answer the question you can.

A You want me to answer your question first?

Q I want you to answer the question first.

A Okay.

Q Please.

A And you're asking me what's in the other proteins?

Q Yes.

A Yes. If you look at -- okay. If you look at Figure 3.

Q Okay.

A All right. And she's got the relative abundance of major proteins that have been identified in WPPC products. And there's -- like I would say there's at least 30 listed here. Right.

Q Right.

A And just a second. I want to -- she did this by mass spec, I think. I'm trying to see what her methods were. Mass spec. HPLC mass spec. All right. So she's got this whole list of things that were identified, I believe, by HPLC mass spec, all right? Figure -- Table 2 contains the first column which says "this study." All the other data we're not -- she didn't get. She's citing a previous publication reference 70. That is the paper by -- I think it's this -- yeah. I'm looking at this really quick and I think it's actually 72 was where the data, and it says, "Omics analysis reveals variations." That's where all the rest of the data comes from. All right? So what this guy Ljungdahl did --

Q Sir, I -- I feel like your answer is not answering my question. My question was very simply do you know what proteins are under

"Other Proteins" here? Do you know?

A Yes, I do. I'm trying to answer your question.

Q I don't need this long dialog. Just what proteins are they?

A And I referred you back here to this Figure 3.

Q Okay. Which of those proteins are the other proteins?

A And so it's all the ones that aren't listed in this table.

Q Okay. Very good. Thank you.

A Add up the numbers --

Q All right.

A -- and do the math.

Q Thank you. Let's look at the MFGM proteins. Do you see those?

A Are you looking in Figure 3 or are you looking over in Table 2?

Q Table 2.

A All right.

Q Are you familiar with those proteins?

A Yes.

Q Okay. Are you familiar with whether they would -- what was the word? -- microparticulate under the conditions of LeanCreme?

MS. KAISER: Objection to form.

THE WITNESS: All right. So what I think I heard you just ask is whether the MFGM proteins would denature and microparticulate using the APV LeanCreme process.

BY MR. KRIEGER:

Q That's correct.

A Okay. And I must say I'm not that familiar with MFGM proteins, but I believe they would -- would at least to some extent denature and microparticulate.

Q Do you have any ability to quantify the degree of denaturation of the MFGM proteins listed in Table 2 of Ozturk, using the process of LeanCreme?

A Do I have any data?

Q Are you able to quantify?

A Quantify, which would mean I need data.

Q Yes.

A Yeah. That's not a topic I know that well.

Q So the answer is "no"?

A I would say that, yeah, from the data given here and my limited knowledge I could say I don't know.

Q Okay. Same question for the other proteins that are listed in Table 2 of Ozturk. Do you

have any opinion concerning the degree of denaturation of those other proteins under the conditions of LeanCreme?

A Yeah. So, yes, that if you look down at the milk proteins they have alpha-lactalbumin and beta-lactoglobulin and serum albumin, you know, the lactoferrin. Some of those I have studied before and I know their denaturation temperatures and properties. The rest of them, GlyCAM-1, Adipofill'in, platelet glycoprotein 4, you know, and so on, and mucin 15, mucin 1, I've never seen any publications on their denaturation properties.

Q Okay. For those that you do know, do you have an opinion on whether those would denature under the conditions of LeanCreme?

A Yeah. And so I would say in this Table 2 that predominant milk protein is beta-lactoglobulin, and that one we know denatures. That's in the Arla 450, 75, all the -- this is the subject that we're talking about.

Q But I'm saying specifically denature under -- or microparticulate under the conditions of LeanCreme.

A So to answer that question I have to go back to

the LeanCreme document and see what temperature they used.

Q Okay. Fair question.

A And if you see what temperature they use then -- before I do, then please let me know.

MS. HUNTER: Page 7.

THE WITNESS: Oh, yes, says right here on page 7. Says, "The smallest particles are typically produced around 85 degrees centigrade depending on other factors." All right. So 85 degrees centigrade beta-lactoglobulin would mostly denature. Because beta-lactoglobulin denatures at a temperature of about 70 degrees centigrade.

BY MR. KRIEGER:

Q Do all whey proteins denature?

A Well, so "all" is another one of those absolute terms and it scares me when I --

Q Well, let me ask you --

A -- when I say "none" and "all."

Q Let me ask you another way. Which proteins do not readily denature?

A And "do not" is another absolute.

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Okay. Can you not answer that question?

A I can answer it, but the way you're phrasing is do not, cannot, all do.

Q I said which do not readily denature? Do you have an opinion on that or are you --

A So the "readily" word is a qualifier --

Q Correct.

A -- to the word "do not."

Q Because nothing's in absolutes, as you said.

A Yeah. Thank you.

Q That's why --

A Because that's what catching me with your language is a lot of times you don't qualify.

Q That's why I put "relatively" [sic] in there.

A Thank you. Thank you. That makes it easier for me to answer your questions. I'm -- yeah. So anyway. So, yeah, I think there's some whey proteins, relatively speaking, that denature more easily than others.

Q Okay. Which ones denature the least, least readily?

A Glycomacropeptide would be one of them.

Q Any others?

A You know, when they describe this MPN in here, which is just merely protein peptides that have

been clipped up. They're not really whole proteins. Those don't denature much. And if we look on this table what else do they have? Yeah, those are the ones I can think of offhand.

Q What about ALA?

A ALA denatures.

Q But it only partially denatures, correct --

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q -- according to LeanCreme?

A Well, you found that reference. I -- I think that's false.

Q It's actually your reference, but --

A Well, I cited that reference, but I'm not vouching for that statement in that reference.

Q So do you disagree with the statement that ALA only partially denatures?

A It depends on what temperature.

Q In the conditions of LeanCreme.

A So LeanCreme it says it heats it to 85 Centigrade.

Q And that LeanCreme indicates that ALA only partially denatures.

A Yeah. And so I have not found that in my own

research.

Q Okay. So you disagree with that?

A Yeah. I'm surprised they said that.

Q Okay.

A 85 Centigrade is a mighty hot temperature for whey proteins.

I'm going to have to take another break.

Q Okay.

THE VIDEOGRAPHER: Off the record, 6:03 p.m.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record at 6:13 p.m.

BY MR. KRIEGER:

Q Okay. Dr. Etzel, if you could turn, please, to Ozturk again --

A Uh-huh.

Q -- and at a high level I just wanted to talk about Ozturk and what -- what its goal is. In paragraph 220 of your declaration you state, quote, "Ozturk aimed to characterize the composition of WPPC," unquote. Do you agree with that statement from your declaration?

MS. KAISER: What paragraph is it?

MR. KRIEGER: 220.

MS. KAISER: Hold on. Let me get to it. 220?

THE WITNESS: 220? Page 114?

BY MR. KRIEGER:

Q Did I get the wrong paragraph?

MS. SAIA: No.

MS. KAISER: Oh, here.

BY MR. KRIEGER:

Q It's a long paragraph.

A Okay. So is it on page 114?

Q I'll read you the quote, okay?

A All right.

Q This is a quote from your declaration. Quote, "Ozturk aimed to characterize the composition of WPPC," unquote. Do you agree with that?

A I'm sorry. I just couldn't find it. I'm looking on my declaration on page 114.

MS. KAISER: If you want to look at all of 220 it's baked into this paragraph, so feel free to read that paragraph.

THE WITNESS: Okay. Oh, yeah, I see it there on line 3.

BY MR. KRIEGER:

Q Correct?

A Ozturk aimed to characterize the composition,

so you're picking out that snippet from her -- from the first sentence.

Q I'm just asking if you agree with it.

A Yes. I -- I agree with that.

Q Okay. And on page 277 of Ozturk, it's the first page.

A Okay.

Q It mentions that, quote, "this work investigates the composition of whey protein phospholipid concentrate, WPPC, an underutilized dairy stream, and reveals that it is a source of many bioactive compounds that can benefit the immune system and gut health," unquote.

A And that's from Ozturk on the page.

Q The first page.

A Very first page. The title page.

Q Title page. Do you know what bioactive compounds they're talking about?

A I know that that WPPC is -- has phospholipids in it and the phospholipids are good for the baby's brain health and development, and so that would be one example of bioactive compounds, but, you know there's a lot of others.

Q They also talk a lot about MFG and MFGM proteins --

A Uh-huh.

Q -- right? Are those examples of bioactive compounds that they're talking about?

A Yes. Because MFG and -- is the milk fat globule membrane is what contains the phospholipids.

Q Okay. So is it fair to say that you would agree that Ozturk does more than just characterize the composition of WPPC; it highlights WPPC and that it contains MFGs and MFGM, which Ozturk asserts are biologically valuable? I know that's a big sentence.

A Yeah.

Q So I can read it to you again if you'd like.

A Thank you.

Q Would you like me to?

A Yes, please.

Q So is it fair to say that you would agree that Ozturk does more than just characterize the composition of WPPC? It highlights WPPC and that it contains MFGs and MFGM, which Ozturk asserts are biologically valuable?

MS. KAISER: Objection to form.

BY MR. KRIEGER:

Q Would you agree with that?

A With that sentence?

Q Yes.

A Yeah. I agree with that sentence.

Q Okay. Let's --

A But I would add one thing with that.

Q Sure.

A Is that I didn't say that she only was after measuring the -- you -- you cherry-picked this snippet out of this sentence from my declaration and -- and you said Ozturk aimed to characterize the composition of WPPC, and I did not add to that and nothing else.

Q Okay. Very good. That's fine. I didn't mean to misrepresent anything. I just was asking if you agreed with that one statement.

A Yes. I just want to qualify my answer in that I didn't -- I didn't say that she didn't do anything else in the paper.

Q I didn't suggest that you did.

A And what I really mean is that one of her aims, but in -- so to speak -- I'm writing she aimed to.

Q Okay. Let's talk about LeanCreme again,

Exhibit 1,010. Page 21 of LeanCreme which you quote in your declaration at 227 --

A Page 21 of LeanCreme you just said.

Q Yes.

A I'm just flipping to that piece of paper.

MS. KAISER: You said something about his declaration too.

BY MR. KRIEGER:

Q You produced a quote from LeanCreme.

A All right.

MS. KAISER: Where is that?

BY MR. KRIEGER:

Q On paragraph 227.

MS. KAISER: Paragraph 227.

THE WITNESS: 227. A lot of paper here.

MS. KAISER: I know.

BY MR. KRIEGER:

Q I know. It's a lot.

MS. KAISER: Okay.

BY MR. KRIEGER:

Q Okay. So here you quote LeanCreme stating, quote, "LeanCreme as a powdered ingredient constitutes the ideal starting ingredient for a wide range of markets and applications such as

slimming milk products" --

A Yeah.

Q -- "with delicious taste, cheeses, food, chocolate, confectionary, ice cream, et cetera," unquote.

A True.

Q And now I'm hungry.

A Yeah.

Q What is meant by "slimming" here, if you know?

A Yeah. It's diet food.

Q Okay. So it's fair to say that LeanCreme is focused on improving the taste of low-fat products; is that right?

A Yeah. This happened during the -- the no fat craze.

Q Okay. And WPPC would not be considered a low-fat product, would it?

A It depends because, you know, ice cream's a really high-fat product and if you can add a LeanCreme to ice cream and the creaminess of LeanCreme means you can use lower fat in the ice cream but it still feels creamy, then you might say it's a diet food.

Q Okay. But WPPC having greater than 12 percent fat --

A Yeah.
Q -- because it is required to have a minimum amount of fat, would not be considered a low-fat product in and of itself, would it?
A Nobody's going to eat LeanCreme powder for dinner. It's used as a food ingredient.
Q Correct. But I'm not saying someone's going to eat WPPC. I'm just saying because it's not a low-fat product -- excuse me -- because -- yeah, WPPC is not considered a low-fat product, and I think you'd agree because at least -- it requires at least 12 percent fat in and of itself, correct? And so isn't it fair to say then that that isn't the type of product that you would need to modify to improve mouth feel?
A But all these things are swimming in my head when you say these words because you don't know what they mean, all right, and so what I'm thinking when you say this is that the United States government sets a legal definition of what low fat, high fat, nonfat means, all right, and when you're using these words "low fat" and I'm thinking, okay, I know what the USDA definition of low fat, high fat, nonfat is, and I'm thinking is he talking about the

USDA government, United States government regulation when he uses the word "low fat"? Is 12 percent -- you say 12 percent. Sometimes you say that's high fat. And I'm like, boy, this is like -- these are, you know, this is like a gray scale, and I know there's legal definition that's not gray whatsoever that defines these things in the food industry, which you're probably not aware of, but you're using these terms and it sends off, like, red alarms in my head because I know there's a legal definition of high fat, low fat, nonfat.

Q So let me ask a different question then. Hopefully you feel better about this one. In view of the description of LeanCreme that we've talked about, right, we talked about how its aim is to improve the mouth feel of slimming foods, right?

A (Nodding.)

Q Would you agree that a main aim of LeanCreme is to adjust the particle size of proteins in WPC so it mimics the particle size of fat?

A I agree with that.

Q Okay. And isn't it true that if a composition is high fat and you wanted to retain the fats

then there would be no reason to adjust the particle size of the proteins to mimic fat because the fat's already there?

MS. KAISER: Objection to form.

THE WITNESS: Okay. So I got confused with that statement because you said "if a composition," and now I'm not sure what you're talking about. Are you talking about the composition of the ice cream --

BY MR. KRIEGER:

Q I'm just saying --

A -- or are you talking about the composition of the LeanCreme powder?

Q A high-fat composition, okay, any high-fat composition --

A Yeah.

Q -- if you wanted to retain fats in that high-fat composition would there be any reason to adjust the particle size of the proteins to mimic fat in view of the fact that it's already high fat?

A So in my head --

MS. KAISER: Objection to form.

THE WITNESS: Sorry. In my -- when I listen to that and you say a composition I'm

thinking ice cream.

BY MR. KRIEGER:

Q Okay. Well, let's talk WPPC, okay? Would you -- would there be any reason to take WPPC and adjust the particle size of the proteins in WPPC, the residual proteins we talked about before, to mimic fat in view of its greater than 12 percent fat content?

MS. KAISER: Objection to form.

THE WITNESS: I would say that, yes, that's what LeanCreme is doing.

BY MR. KRIEGER:

Q Well, LeanCreme's working on WPC.

A They are.

Q Not WPPC.

A That's right.

Q So my question is specific to the greater than 12 percent WPPC that we discussed.

A Right. Yeah. And so -- so what -- if you put WPPC in the LeanCreme process and heated it and sheared it and you're going to get microparticulated protein and it's going to mimic the mouth feel of fat and you add that to ice cream, you could use ice cream with less fat and it would still feel creamy like regular

high-fat ice cream.

Q But if WPPC already has greater than 12 percent fat --

(Reporter clarification.)

BY MR. KRIEGER:

Q But if WPPC has at least 12 percent fat, why would you need to modify the WPPC to feel like it had more fat content?

MS. KAISER: Objection to form.

THE WITNESS: So why?

BY MR. KRIEGER:

Q Yes.

A Because you could make it even more creamy, and when you add it to ice cream you can even use less fat in the ice cream.

Q Okay.

A And that fat would be replaced by protein, but protein that has that creaminess effect.

Q Okay.

A And that the fat that's in WPC is not microparticulated, so it's not necessarily have the same creaminess as the fat -- as the microparticulated protein has. You could actually have it so that the microparticulated protein has a more creamy mouth feel than the

fat that -- which is phospholipids really -- in the LeanCreme. And so by microparticulating the protein in the WPPC you could reduce the fat content of ice cream even more than if you did not microparticulate it.

Q Okay. Okay. I think we have no further questions.

MS. KAISER: Okay. Let's take a break and we'll see if we have any redirect.

MR. KRIEGER: Okay. Sounds good.

THE VIDEOGRAPHER: Off record, 6:26.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record at 6:40 p.m.

E X A M I N A T I O N

BY MS. KAISER:

Q Hi, Dr. Etzel. Do you remember earlier when you were testifying about the N11 powder that was in Dr. Neilson's cupboard at the Arla facility in Denmark?

A (Nodding.)

Q Do you recall that?

A I do.

Q And you referred to, I think, it being sort of tucked in the back behind dirty laundry. Do

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you remember that?

A Yes.

Q And I just wanted to ask you a couple questions about that because sometimes hyperbole or things doesn't come across well in the transcript.

A Yes.

Q So when you -- when you saw that powder, that bag of powder, what state was the actual bag of powder in?

A Okay. So there was no dirty laundry in that locker, I should say first off, and there were other bags of powder in there, but it wasn't -- like maybe I exaggerated and embellished a little bit about the dirty laundry comment, but the bag of the powder itself was like, I would say, at least triple-wrapped in plastic, each twist-tied off, and then on the outside there was a label.

Q Okay. Was there any indication that that bag of powder had been treated roughly even though maybe the locker was in, you know, not as neat as -- as Tanja's, for example?

MR. KRIEGER: Objection. Leading.

THE WITNESS: Okay. So what should I

answer?

MR. KRIEGER: You can answer.

THE WITNESS: Okay. So it looked to me like that powder had sat in there for a long time. It was kind of in the back. More fresh samples had been placed in front of it. It was -- it looked to me like it had been sitting in there in the back sort of out of the way.

BY MS. KAISER:

Q Okay.

A And that fresher samples were out near the door.

Q Okay. Okay. I want to ask you -- Mr. Krieger asked you about Exhibit 1,021. Can you get that exhibit in front of you?

A Which one is 321 [sic]?

Q It is Ms. Jaeger's declaration.

A Oh, yeah. Okay. Just take a second.

Q And maybe just to help with logistics and getting -- avoid getting confused by paper, can you get 1,021, 1,007, which is Nielsen 450?

A Okay. Got it.

Q And then your declaration, which is Exhibit 1,003.

A All right. So the paper here. If I put this

here, will it be in your way?

THE REPORTER: No.

THE WITNESS: All right. I'm ready.

BY MS. KAISER:

Q All right. In your declaration, which is Exhibit 1,003, can you go to page 82?

A Okay. I'm there.

Q And you see that there's paragraph 167 with a table that you referenced earlier in your testimony. Do you see that?

A Yes. Yes.

Q Okay. And the first row in that table under "Sample Name," it says "BLG Powder A." Do you see that?

A Yes.

Q Okay. And then under "SAP Number" it lists "Batch N11 28-11-17 Week 48." Do you see that?

A Yes, I do.

Q What's your understanding of that nomenclature?

A That batch of powder is the one that Tanja pulled out of Soren's locker.

Q Okay. And do you have an understanding of what the 28-11-17 means?

A That's the date in European nomenclature.

Q Okay. And the day of what?

A It's -- it's day, month, year.
Q Okay. But what does that date signify in terms of the powder?
MR. KRIEGER: Objection. Foundation.
BY MS. KAISER:
Q If you know.
A My guess is that that's the date of production.
Q Okay.
A Or manufacture, call it.
Q Okay. And then you see the third column says "Protein Percent" in that table?
A Yes.
Q And then for the first row there's two different protein percents. One says, "Measured 2017 equals 93.97 percent." Do you see that?
A Yes. Yes.
Q And then the other one says, "2025 equals 89.25 percent." Do you see that?
A Yes.
Q Okay. If you go to Ms. Jaeger's declaration, which is Exhibit 1,021, and go to paragraph 9, which starts on page 2 but goes over to page 3, and let me know when you're there.
A Okay. I'm there.

Q Okay. If you go to page 3, do you recall that Mr. Krieger asked you some questions earlier about the table that is in paragraph 9 but on page 3?

A Yes.

Q Okay. And you see that there is a column that says "Measured 2025"?

A Yes.

Q And I believe you testified earlier that those measurements were taken in February 2025 when you were at Arla's facility to conduct your experiments; is that right?

A Yes.

Q Okay. And what is the total protein percentage for that -- that right-hand column, "Measured 2025"?

A Is 89.25.

Q Okay. And if you look back at your declaration in paragraph 167 --

A Yes.

Q -- and do you -- how does that compare with what you reported as the 2025 protein percentage?

MR. KRIEGER: Objection. Objection. Leading. Beyond the scope.

THE WITNESS: Okay. So I look at Tanja's table and it says 89.25, and then I look at the table over in my declaration on page 82, which is actually from Tanja's electronic notebook, and it says 89.25.

BY MS. KAISER:

Q Okay.

A It's the same sample.

Q Okay. And then if you look at the second column in the table in Exhibit 1,021, page 3, you see that column's labeled "Measured 2018/2019."

A Oh, yes. Yes.

Q Okay. And what is the total protein percentage on that -- in that column?

A 93.97.

Q Okay. And then if you look back at your declaration in paragraph 167, for "Measured 2017" what protein percentage is reported there?

MR. KRIEGER: Objection. Leading. Beyond the scope.

THE WITNESS: So when I look at the table in my declaration on page 82 in the right-hand column and it says "Measured 2017,"

it says that the protein is 93.97 percent. Same as the table -- Column 2 of the table in Tanja's page 3.

BY MS. KAISER:

Q Okay. I want to direct your attention now to Nielsen 450, which is Exhibit 1,007. And we'll just start at the cover page.

A Okay.

Q Let me know when you have that.

A I'm ready.

Q Okay. On Nielsen 450 do you see that there is -- on the cover page a field that's labeled 30 and then it says "Priority Data"? Do you see that?

A Yes.

Q What date is reflected in that field?

MR. KRIEGER: Objection. Beyond the scope.

THE WITNESS: I can read it to you. It's printed right here. It's the 27th of June, 2018.

BY MS. KAISER:

Q Okay. And then do you see that there's a Field 22 that's "International Filing Date"?

A Yes.

Q And what date is reported there?

MR. KRIEGER: Same objection.

THE WITNESS: Anybody can read this. It's 26 of June, 2019.

BY MS. KAISER:

Q Okay. And I think you testified earlier that this was something that you -- this was a reference -- Nielsen 450 was a reference that you reviewed in preparing your declaration.

A Definitely, yes.

Q Okay.

A Yeah.

Q If you'd go to Table 9, which I'll give you the page number.

A This is in my declaration.

Q It's also in your declaration, but it's -- we can --

A Oh, Table 9 in 450.

MR. KRIEGER: Page 108.

THE WITNESS: Page 108.

BY MS. KAISER:

Q Thank you. I have my pages out of order. All right. Let me know when you are at Table 9.

A I'm there.

Q Okay. And it would be helpful, and I think you

still have this, if you have Exhibit 1,021, the table that we've been talking about in front of you, as well.

A That's Tanja's --

Q Yes.

A -- declaration. Okay. Yes. I see them both.

Q Okay. So in Nielsen 450 in Table 9 do you see that there's a column that's labeled "Description"?

A Yes.

Q And then there's a column that's labeled A, "Dry BLG" and then "W/W percentage"? Do you see that?

A Yes.

Q Okay. And in Table 9 what percentage is reported for BLG?

A 95.9.

Q Okay. And then if you go back to Exhibit 1,021 for the column that's measured 28 -- 2018/2019, what percentage of BLG is reported there?

A Yeah. 95.9.

Q Okay and going back then to Table 9 of Nielsen 450, do you see the protein percentage reported there?

A Yes.

Q What is that?

A It's 93.97.

Q Okay. And then back to Exhibit 1,021, which is Ms. Jaeger's declaration, do you see a total protein percentage reported there?

A Yes. It's 93.97.

Q Okay. And then in Table 9 of Nielsen 450 do you see a dry matter percentage reported there?

A Yes.

Q And what is that?

A 95.19.

Q And then, again, going back to Ms. Jaeger's deposition -- or declaration, for "Measured 2018/2019," do you see a dry matter percentage reported there?

A Yeah. It's exactly the same number. All three numbers are exactly the same.

Q Okay. Do you remember when Mr. Krieger was asking questions earlier and I believe you testified that you thought this "Measured 2018/2019" column was a different sample of powder than the "Measured 2025" column?

A Yeah. I remember saying that, but it looks like, you know, I was speculating when I said that and kind of trying to imagine -- because

she doesn't say -- Tanja doesn't say where these samples came from. I was trying to imagine, like, how did she analyze them and she's got the dates 2018, 2019, and I was thinking back to this Bertelsen patent, which is 2017. I thought, well, it must not have come from there, but then I -- I realized now that I was wrong because it was actually in a 450 patent, and so I was speculating and I speculated wrong and I apologize for that.

Q Okay. So having now been able to review this Table 9 in Nielsen 450, would you answer Mr. Krieger's questions differently?

A I would, yeah.

Q Okay.

A You know, yeah. I -- I totally missed it --

Q Okay.

A -- from what you said, and I -- you know, I jumped to an answer. I felt under pressure, and I -- I was speculating, and I was wrong. And if I had spent more time thinking about it, you know, and I wasn't under pressure I would have realized that it's pretty obvious that this sample in 450 is the same one as the sample in Tanja's second column here on page 3.

Q Okay. And so having reviewed this now, is it -- is it your understanding that the third column "Measured 2025" in Tanja's declaration and the second column "Measured 2018/2019" are measuring compositions of the same powder, just at different times?

A Yeah.

Q Okay. No further questions.

MR. KRIEGER: Yeah. Just a couple minutes.

MS. KAISER: Off the record.

THE VIDEOGRAPHER: Off the record at 6:54.

(Short break was taken.)

THE VIDEOGRAPHER: We are back on the record at 7:01 p.m.

MR. KRIEGER: All right. Thank you, Dr. Etzel. We don't have any further questions. Thank you for your time.

THE WITNESS: Okay.

MR. KRIEGER: Thank you for your time today.

THE WITNESS: All right. Thank you.

THE VIDEOGRAPHER: There being nothing further, this will conclude the

deposition. We'll go off the record at 7:01 p.m. And seven media units were used.

(Proceedings concluded at 7:01 p.m.)

STATE OF WISCONSIN)
) ss.
COUNTY OF WAUKESHA)

I, ANNICK M. JAQUET, RMR, CRR, Notary Public in and for the State of Wisconsin, do hereby certify that the preceding deposition was recorded by me and reduced to writing under my personal direction.

I further certify that said deposition was taken before me at PERKINS COIE, LLP, Madison, Wisconsin, on the 3rd day of April, 2026, commencing at 9:19 a.m. and concluding at 7:01 p.m.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, nor a relative or employee of such attorney or counsel, or financially interested directly or indirectly in this action.

In witness whereof, I have hereunto set my hand at Milwaukee, Wisconsin, this 10th day of April, 2026.

Annick M. Jaquet

ANNICK M. JAQUET, RMR, CRR
Notary Public
in and for the State of Wisconsin

My commission expires September 29, 2029.