

Transcript of Dr. Robert Lochhead

Date: July 10, 2025
Case: Dr. Squatch, LLC -v- The Proctor and Gamble Company (PTAB)

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Exhibit 1081
Dr. Squatch v. P&G
IPR2024-01104

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

DR. SQUATCH, LLC,
Petitioner,
V.
THE PROCTOR & GAMBLE COMPANY,
Patent Owner.

U.S. Patent Nos. 10,966,915; 11,497,706;
10,905,647; 11,433,018
IPR Nos. 2024-01104; 2024-01105;
2024-01173; 2024-01174

Deposition of DR. ROBERT LOCHHEAD
REMOTE VIA ZOOM
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Reported By: Rachel F. Gard, CSR, CCR, RPR, CRR

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Deposition of DR. ROBERT LOCHHEAD, held remotely via Zoom:

Pursuant to notice, before Rachel F. Gard, CSR, CCR, RPR, CRR, Notary Public in and for the States of Indiana and Michigan.

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A P P E A R A N C E S

ON BEHALF OF THE PETITIONER:
JOSHUA CALABRO, ESQUIRE
MANNY CAIXEIRO, ESQUIRE
JUSTIN OLIVER, ESQUIRE
VENABLE LLP
600 Massachusetts Avenue, NW
Washington, DC 20001
202.344.4000

ON BEHALF OF THE PATENT OWNER:
ANDREA JEFFRIES, ESQUIRE
MARLEE HARTENSTEIN, ESQUIRE
JONES DAY
500 Grant Street
Suite 4500
Pittsburgh, Pennsylvania 15219
412.391.3939

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PROCEEDINGS
(Witness sworn.)
WHEREUPON:
DR. ROBERT LOCHHEAD,
called as a witness herein, having been first duly sworn, was examined and testified as follows:
CROSS-EXAMINATION
BY MR. CALABRO:
Q Good morning, Dr. Lochhead.
A Good morning.
Q Is that how -- did I pronounce your name correctly?
A Yes, yes.
Q Good morning. So you've been deposed before, right?
A Yes.
Q You know how this works?
A Well, I think so. Everybody is --
Q Fair. So I'll be asking you a series of questions. If you could respond verbally so the court reporter can transcribe your testimony, that would be good.
Understood?
A Yes.
Q And let's try to wait for each other to

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finish our answers so we can get a clean transcript. All right?
A Yes.
Q And you understand you're under oath, correct?
A I do.
Q Okay. And who is in the room with you today?
A Marlee Hartenstein is in the room with me.
Q Anyone else?
A No, that's all.
Q And you have some documents with you?
A Yeah. We have the documents. I think all the documents I relied on are here and my reports.
Q So you have your reports, and you have Dr. Michniak-Kohn's reports?
A I don't know -- yeah. Yes, I do.
Q And then you have the exhibits to those reports as well?
A Yes.
Q Anything else with you, any notes or anything like that?
A No, no.
Q How did you prepare to testify today?
A Well, I spent the last couple of days going over my reports with counsel. And before that, more than 50 years of experience in the field prepared me in a nutshell.
Can you hear me okay?
Q I can hear you well. Can you hear me?
A Yes. My allergies are kicking in today. So if you can't hear me, just let me know. Especially, Court Reporter, let me know and I'll try my best to speak up.
Q Appreciate it. Sounds fine on my end so far.
A Okay.
Q Tell me about your educational background, Dr. Lochhead.
A Okay. I began as -- I did something called High National Certificate in Scotland, which was the Royal Society of Chemistry. That led me to a bachelor's degree in chemistry at University of Strathelyde, which then led to a Ph.D. at the University of Strathelyde and postdoc at Carnegie-Mellon University. And that was my formal education. And the postdoc was in chemical engineering. All the rest were in chemistry, material science.
Q Do you have any specialty? Or what was

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your thesis in?
A Oh, my thesis was in dielectric relaxation. What it looked at was how helical molecules -- what were the shape of helical molecules in a nutshell. People couldn't figure out DNA fit in the cell because they thought it was a spring, and I showed it was a Slinky. But not with DNA, with other helical molecules. But that explained to people how a Slinky could fit into the nucleus of a cell. It's a rod. Basically that's what my Ph.D. was about showing the helical molecules were Slinkies rather than rods.
Q And please tell me about your employment history.
A I started as a lab assistant in ICI Nobel Division. What I did there was explosives analyses, ethers, surfactants, and also silicons that I was a silicon synthesis, silicon chemist. And then after, then I did my bachelor's, Ph.D., and then 10 years with Unilever. I was a background scientist in the Unilever lab. My job was to know background scientists guided formulators.
Following that, I came to B.F. Goodrich,

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where I eventually headed up the hydrophilic polymers group. But we made hydrophilic polymers for all sorts of applications, including cosmetics, personal care, pharmaceuticals. And my job was to, again, understand where it was fitted and educate customers on -- clients on how to use materials and to invent new materials.

Then I transferred to the University of Southern Mississippi and the School of Polymer Science and Engineering. And it was Polymer Science at the time. It's now Polymer Science and Engineering. But I chaired that department for about 20 years and was a faculty member the other times, and then currently I'm professor emeritus in the university.

Q Let me go back to your time at Unilever. What sorts of products were you involved with formulating there?

A Well, actual formulating was in conditioning shampoos. We were looking at varying conditioning shampoos. My job was actually to be in the background. I provided background information to hair, skin, dental -- hair, skin, and dental people formulating. So what I did was I guided the formulators with the science. That

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was my job. That was basic -- I did basic science.

Q Okay. So what kind of background information would you provide?

A Oh, well, take conditioning shampoos, for example. I would explain to them -- in those days, we didn't really know how they work. I figured out the mechanism and taught the formulators how they worked and, therefore, what they could do and what they couldn't do.

In hairsprays, I figured out the properties of the polymers, how to use the polymers, how to measure, how to test the polymers, how to put them into your formulation, how to specify what you need. And I did lots in polymers.

Then I moved to Colloid and Surface Science. In Colloid and Surface Science, we covered not just polymers but advised the people in skin and dental as well on things like hardness for toothpastes, for example, and then how to measure, how to incorporate what to do, what problems they might run into.

But basically that was -- my gamut was I was called in to see which other area was going

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on. Most of my work was in hair, but I did go into the other areas as well.

Q And by "other areas," what do you mean?

A Skin and teeth. Hair, skin, teeth. Products for skin, products for teeth, products for hair.

Q And do you have any experience either formulating or providing background information to formulators that specifically relates to deodorants?

A Yes, yes, I did some work in Unilever, mainly guiding people a little. But I've consulted in deodorant, yes. Indeed, yes.

Q What time period was this?

A Oh, in Unilever, this was the '70s. My consultation -- well, when I worked for Goodrich, I was guiding people on how to use polymers. But my consultation in sticks started in the '90s and in deodorants in general, that's when I worked with companies and consulting.

Q Okay. And what kind of consulting services did you provide with respect to deodorants?

MS. JEFFRIES: And, Dr. Lochhead, I'd at this point caution you to not reveal any

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confidential information of your consulting that you may have done. Of course you can answer and speak generally at a high level. I just want to make sure you don't breach any confidentiality agreements.

A I can't remember the detail because the kind of things that we did in my consulting was mainly to help my students and get my students involved with these companies, to get my students internships in these companies and, as part of that, I did consulting. I can't remember the detail of deodorants and antiperspirants, but yeah, I did some deodorant and antiperspirant consulting.

Q And do you recall generally the nature of the services you provided?

MS. JEFFRIES: Objection. Asked and answered.

A Services, well, I think the services, I said were -- I was more interested in getting the companies to be interested in my students, and so I provided -- and as a result, they usually come in and ask me to consult, and I consulted for many companies across the board. They'd ask me before we started projects, for example, that's how we'd

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get into projects. They'd come to me with problems and of any work done. We actually did work in my lab in the university, and that was the kind of consulting. I don't know if that answers your question, but that's the kind of consulting I did.

Q What kind of question would a company -- you don't have to reveal the company's name. But what kind of question would a company come to you that relates to deodorants and seek your expertise in?

A Oh, I can't remember off the top of my head here. But mainly how to put things together and how to measure properties. That was what we did.

Q Do you recall generally when the last time you consulted regarding a deodorant was, like, what the general time period was?

A Oh, gosh.

MS. JEFFRIES: That's vague.

A I don't know. I could have consulted on the basic science all the way through. For a natural deodorant -- remember when the companies consulted with me, we were looking at broad science that was mainly to specify what became

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more specific. I would think somewhere between the '90s and -- 1990s and the 2000s is when I probably consulted in that area.

Q Okay. So fair to say it's been about 20 years since you consulted with respect to a deodorant?

MS. JEFFRIES: Objection. Mischaracterizes testimony.

A Actively consulted, perhaps 10 years ago. I've been involved in the industry and reading and understanding and guiding people up until, well, very recently.

Q Now, you have a number of publications that you've authored, right?

A Yes.

Q Have you published on deodorants?

MS. JEFFRIES: Objection. Vague.

A I don't think I've published on deodorants per se, but I've certainly published on the science that is behind deodorants.

Q And what would that science be?

A Well --

MS. JEFFRIES: Objection. Vague.

A -- rheology. Looking at sprays, looking at particles -- where the particles -- to design

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the right particles for sprays. Looking at sticks, how to measure sticks, how to formulate sticks, what the composition -- what the structure property relationships would be in things like sticks.

Q And what type of sticks are you referring to?

A All kind. Lipsticks, deodorants. All kinds of sticks. And all kinds of technologies that are behind sticks.

Q So is the technology that's behind sticks generally applicable to deodorants?

MS. JEFFRIES: Objection. Vague. Mischaracterizes testimony. Misstates.

A There are many different stick technologies. And some of them are common technologies or common understanding. But, of course, you have to modify the properties of the product for the application that you're using. So you just can't take a stick from one area and pop it into another or one technology and pop it general. So I think that was the question you asked.

Q And can you identify any specific deodorant stick that you worked on formulating?

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MS. JEFFRIES: And, Dr. Lochhead, I'll just give you that same instruction, not to reveal any confidential information.

A Again, could you repeat your question, please?

Q Sure. Can you identify any specific deodorant stick that you worked on formulating?

MS. JEFFRIES: Objection. Or instruction.

A As I said, I didn't work on specific products. Some of them became specific products. But my job was to -- or not my job, my role was to tell the people the basics, how to put things together, what would work and what wouldn't work. Some of them, I think you're saying could I identify particular products. I could point to things I think became products, but I can't be sure that the actual technology was used in that particular product. I know it was used in many products.

Q Can you identify something that you worked on that you think became a deodorant stick?

MS. JEFFRIES: Again, same objection not to reveal confidential information.

A That I worked on, well, I'll give you an example, I did work with the Bianchi team a while

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ago, and I did some work with them. I did work generally with the whole company, so I can't remember the detail.

Q Did you work with the Bianchi team on a deodorant stick?

MS. JEFFRIES: Same instruction not to reveal confidential information. If you can answer without doing that, you may.

A I worked on the basic science that may have become deodorant.

Q You have --

A I'm sorry. Antiperspirant. Antiperspirant in the case of Bianchi.

Q You have some patents on which you're named as an inventor, right?

A Yes.

Q Do any of those relate to deodorants?

MS. JEFFRIES: Objection. Vague.

A Not that I'm aware, no.

Q You're listed as the editor of some books, correct?

A Yes.

Q You edited Cosmetic Nanotechnology, Polymeric Delivery of Therapeutics, and Cosmetic Science and Technology, right?

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A Yes.

Q What did you do in your role as editor of those books?

MS. JEFFRIES: Objection. Compound. Vague.

A As editor, I identified -- first of all, identified what content you want in the book and then identify people who had expertise in that area and who were willing to write in that area. And then as editor, I then brought the book together and basically guided the writers down to edited the writing and then put the -- brought the chapters together in the right order and worked with the publisher and published the book.

(Deposition Exhibit Number 1 marked for identification.)

Q I dropped into the chat what we'll call Exhibit 1. It's U.S. Patent No. 10,966,915. Do you have that?

A Yes. And I think I'm just going to work with the paper because I just dropped something from the chat and I think it cut everyone off a moment ago.

Q Yeah, that's fine. You can look at your paper copies.

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Before we do, I just want to close out something on your background. You've done some work for Procter & Gamble, right?

A Yes.

MS. JEFFRIES: Objection.

A Yes, I've done some work for Procter & Gamble.

Q And can you tell me about that consulting work?

A Again, the consulting that I did for Procter & Gamble is the same as the consulting I did generally. It was mainly looking at -- I was trying to place my students in -- Procter & Gamble, Johnson & Johnson, SC Johnson, L'Oreal, they take my interns, and we did research for them at the university. So consulting was mainly in association with that kind of activity. And so it was mainly directed towards guiding them in the science but also placing my students as interns and placing my students eventually as employees.

Q Did the consulting relate to any particular product?

MS. JEFFRIES: Objection.

A Sorry. Across the board. We consulted generally in all sorts of areas.

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Q What general areas would you consult in for Procter & Gamble?

A Same as I consulted for the other companies, things like skin products, hair products, oral products, the basic science pertaining to oral products, sprays. Basically cosmetics and some pharmaceuticals in general, we did.

Q And what time period did this consulting for Procter & Gamble take place?

A Oh, in that instance of my students from 1990 until last June -- maybe 5 years ago, 10 years ago. About 10 years ago I stopped actively consulting with all the companies.

Q Do you recall generally how much you earned from your consulting work with Procter & Gamble?

A It's actually listed on my CV. The earning was mainly to support my research, and I think about, I don't know, 250,000, 300,000 in total. But that was research funds. I mean, that's mainly what they gave me was research funds.

Q And what research did you do with the funds that you got from Procter & Gamble?

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A I think it's listed on my CV. I can't remember off the top of my head. But the projects are actually listed on my CV.
Q Okay. You've also testified on behalf of Procter & Gamble in the past?
A Yes, I did once. I testified -- I don't know if "testified on behalf of." I was an expert in a case between Procter & Gamble and Unilever, but as an expert, I suppose, I don't take sides.
Q Fair enough. Do you recall the -- what that case was about?
A Yes. It was about conditioning shampoos. Two-in-one shampoos.
Q Yeah. Did you review the final decision in that case?
A I heard about the final decision. I didn't review it.
Q And what was the decision?
A I know that Unilever -- it was an IPR. And as far as I'm aware, Unilever won the IPR.
Q Now, let's turn back to Exhibit 1. Let me know when you've got your paper copy.
A Got it.
Q Okay. So you recognize Exhibit 1 to be U.S. Patent No. 10,966,915, right?

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A I do.
Q We can call that the '915 patent, right? Is that okay?
A Okay.
Q So I'm going to direct your attention to the claims, which are at the end of this patent. Let me know when you're there. Last page.
A I'm there.
Q Okay. So please take a look at claim 1. And you see it recites a deodorant stick comprising (a), (b), and (c), and (a), (b), and (c) each list one of the ingredients of the deodorant, right?
A Yes.
Q So (a) is at least 25 percent liquid triglyceride; (b) is at least one antimicrobial; and (c) is a primary structurant with a melting point of at least about 50 degrees Celsius. Right?
A That's right, yes.
Q Now, is there any ingredient missing from that list to be necessary for a stick to be considered a deodorant?
MS. JEFFRIES: Objection. Vague.
A I don't understand your question. The claim is written in the context of the patent, and so that's -- I don't know what you mean if there's something that's missing from that. That's a hypothetical question, I think.
Q Well, you're an expert. So in the context of this patent, the claim recites three ingredients, right?
MS. JEFFRIES: Objection. Vague.
A Claim 1 says a liquid triglyceride, an antimicrobial, and a primary structurant. That's the requirement of claim 1 and it has to be free of aluminum salt.
Q My question is: There's a stick with at least 25 percent liquid triglyceride, at least one antimicrobial, and a primary structurant with a melting point at least 50 degrees C.
Is that stick a deodorant?
A Yes. It says it's a deodorant, yes. It specifies a deodorant stick.
Q Now, if the claim didn't say deodorant, if a stick had at least 25 percent liquid triglyceride, an antimicrobial, and a primary structurant, would that stick be a deodorant?
MS. JEFFRIES: Objection. Incomplete hypothetical. Misleading. Mischaracterizing the record.
A Well, the claim doesn't just sit there by itself. You see the claim in the context of the patent, and so -- or the claim or the written description. So to understand the claim, I would go to the written description to see what it described. And that's why you figure out what it applies to.
Q So if we set the claim aside and I have a stick with at least 25 percent liquid triglyceride, an antimicrobial, and a structurant, it's in a stick, would that stick be considered a deodorant?
MS. JEFFRIES: Objection. Incomplete hypothetical. Irrelevant. Misleading.
A It may or may not be.
Q And what would determine whether it is or is not?
A When I look at -- are you talking about the claim, or are you talking about a stick in general?
Q Just a stick in general.
MS. JEFFRIES: Objection. Incomplete hypothetical and vague.
A Can you ask me the question again? I'm

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sorry. I've forgotten what the question is.
Q A stick has at least 25 percent liquid triglyceride, at least one antimicrobial, and a structurant, it's in a stick, would that stick be considered a deodorant?
MS. JEFFRIES: Objection. Incomplete hypothetical and vague.
A It may or may not be. It depends on the properties that that stick has, and so it may or may not be considered a deodorant.
Q And what properties would the stick have to have to be considered a deodorant?
MS. JEFFRIES: Same objections. Incomplete hypothetical and vague. Misleading.
A A lot of properties. Is this in the context of the patent, or is this -- sorry. I'm asking you questions.
Q Just answer both ways if they're different.
MS. JEFFRIES: Objection. Same objections. Incomplete hypothetical. Misleading and vague.
MR. CALABRO: Andrea, Andrea, one-word objections. "Vague" is not a proper objection.
MS. JEFFRIES: It is.

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MR. CALABRO: No, Andrea, the Trial Practice Guide, page 128, examples of improper objections, "objection, vague." You can't coach the witness. You're limited to one word, so you have to stop, all right.
MS. JEFFRIES: Thank you for the lesson. I'll continue to defend the deposition. If you're asking poor questions and you're trying to trick a witness, then that's an inappropriate comment --
MR. CALABRO: Andrea, Andrea --
MS. JEFFRIES: -- so if you want to have a conversation, we can do it on the record, we can do it off the record, however you want.
MR. CALABRO: Stop talking. You can object with one word.
MS. JEFFRIES: I'm allowed to speak. I don't know where you're going with this. Why don't we proceed to take a deposition and not waste time on this stuff.
Q Dr. Lochhead, do you need the question read back to you?
A Yes, please.
Q I asked if a stick with at least 25 percent liquid triglyceride, an antimicrobial, and a primary structurant would be considered a

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deodorant. You said it may or may not be depending on the properties.
My question was: What properties would a stick have to have to be considered a deodorant?
MS. JEFFRIES: Same objections.
A In the context of this patent, yes, it would be considered a deodorant. And I think the patent, if you look at the context of the patent, it describes the properties.
Q Okay. Now let's go to claim 15 in the '915 patent. Claim 15 has one of the properties, right?
A Yes.
MS. JEFFRIES: Objection. Mischaracterizes.
Q And it says: The deodorant stick of claim 1 wherein said stick has a hardness from about 80 decimillimeters to about 140 decimillimeters measured by penetration with an ASTM D1321 needle, right?
A Can you tell me the units you're using?
Q Maybe you can tell me the units if I got them wrong. What units are recited in claim 15?
A Well, the patent tells you what the units are. If you'd give me a minute, I'd like to be

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accurate. I'd like to look at where it tells you.
If you go to column 13, it says: To report the results of penetration are 10ths of a millimeter. 1/10th of a millimeter equals 100 microns. For example, 80 units is 80 millimeters times 10, so that's reported in 10ths, 8 millimeters. Your penetration would be 8 millimeters, the specification would be -- of the claim would be 8 millimeters to 14 millimeters, I'll do it that way.
Q Now, if we look back at claim 1, would all deodorants with the three ingredients listed in (a), (b), and (c), fall within the hardness range of claim 15?
MS. JEFFRIES: Objection. Vague.
A Could you say the question again? I want to get it right in my mind. Sorry. Would all --
Q Would all deodorants with the three ingredients listed in (a), (b), and (c) in claim 1 fall within the hardness range of claim 15?
A Yes, because claim 1 is written in the context of the patent. The patent teaches you what's required, and the patent actually -- if you look at the patent, one of the requirements of the patent is that deodorants have that hardness. So

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if you read the patent in total, you find that sticks that they talk about have that -- fall within that hardness range.

Q Could there be a stick that had at least 25 percent liquid triglyceride, at least one antimicrobial, and a primary structurant with a melting point of at least 50 degrees C that did not fall within the hardness range of claim 15?

MS. JEFFRIES: Objection. Incomplete hypothetical.

A In the context of this patent, no. Outside the context of this patent, it's possible.

Q So how would one skilled in the art have gone about formulating a deodorant with these three ingredients to meet the desired hardness?

A Well, the patent actually tells you. It gets into -- the patent has pretty precise instructions on how to make the stick, and so that's -- a person trying to make the stick with this hardness would follow the instructions in the patent.

Q And what does the patent tell someone skilled in the art about how to make a deodorant that has the desired hardness?

MS. JEFFRIES: Objection. Calls for a

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narrative.

A I think the patent -- the patent defines the ingredients pretty well and then actually does lay out the procedure for making the -- making the stick in the case of a deodorant stick.

Q Are you done answering, or are you going to point me to something?

A You can ask me another question.

Q Sure. So what specifically does the patent tell someone skilled in the art to do to make a deodorant with the desired hardness?

A Well, for example, starting at column 10 is the method of making, and what it says is that you take the different materials and you put them together, and it specifies that you have to be very careful that you don't get water or adventitious water in the material that says Y. So you have to have an open tank, an open mixer, or a vented mixer to get rid of any water vapor.

You then melt the components together and you -- once the components are melted together, it then instructs you how to mold it, the material into a stick on columns 10 and 11. And then it goes on to tell you how to test the stick.

Q And will all sticks made by that process

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have the claimed hardness?

MS. JEFFRIES: Objection. Incomplete hypothetical.

A Well, all sticks made by that process, you have -- all sticks, that's a huge composition range you've given me. But no, they specify a particular process for the stick that they are making.

Q So how would one skilled in the art go about selecting the ingredients and the amounts of ingredients to achieve the desired hardness?

A Well, if one --

MS. JEFFRIES: Objection. Overly broad and vague. Answer, if you can.

A One skilled in the art would read the patent and it would -- they'd follow the directions in the patent, and they would also have enough skill to make a material. One skilled in the art would know how to make these things. But with the instructions in the patent, they could follow the patent and make it.

Q How would a POSA have -- by "POSA," I'm referring to a person of ordinary skill in the art?

A I know.

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Q So how would a POSA have gone about selecting a structurant to achieve the desired hardness?

A That actually tells you. There's a whole section on structurants. And on columns 3 and 4 into 5 and even into 6, there's -- there's a section on how to choose a structurant. Do you want me to read it or ...

Q No, that's not necessary.

So let's say a POSA picked one of those structurants. How would the POSA then vary the amount of that structurant and to achieve the desired hardness?

MS. JEFFRIES: Objection. Vague. Incomplete hypothetical.

A Well, a person of ordinary skill in the art would roughly know the limits of when to use a structurant, how to use a structurant. And in this case, they'd be guided, for example, by the example in Table 1, which shows you the kind of range of structurant that you can have, the types of structurant you can have. And that would guide a person how to use it.

The other thing is, of course it does -- they do tell you in the patent in the section I've

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just explained to you, they give these percentage ranges that you can use for the structurant.

Q Now, so let's go to Table 1 that you pointed to. And that lists a couple of comparative formulas, right?

A Yes.

Q And the patent -- by the way, do you know what those comparative formulas were?

A No, I don't.

MS. JEFFRIES: Objection. Vague.

Q Did you see Dr. Michniak-Kohn matched up nine of the ingredients with the Native prior art label?

A Yes, but the label is just a list of ingredients. It doesn't tell you how to -- the absolute concentrations are what they are. Yes, speculation is it could be the Native product, but that's all I've seen that says it could be Native. You could speculate it's Native, but you need to know more information.

Q And you understand Native is a P&G product, right?

A Yes.

MS. JEFFRIES: Objection. Vague. And misstates the factual record.

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Q Did you ask P&G if these comparative formulas were Native?

A No.

Q Okay. So if we look at comparative formulas 1 and 2, they're reported to be too hard, right?

A Yes.

Q And so what adjustments were made to make them less hard?

MS. JEFFRIES: Objection. Incomplete hypothetical. Assumes.

A I think that's what the patent explains, that they adjusted the composition to get the hardness just right.

Q And what -- specifically what ingredients did they adjust?

A Well, of course the principal ingredients would be the structurant and the liquid. But all of the ingredients would have had an effect on the hardness. As you add other ingredients, it would also have an effect on the hardness.

Q If you look right under Table 1, in column 3, it says: It is known that to formulate a solid antipersperant or deodorant stick, the structurants generally have a melting point above

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50 degrees C to provide stable structure to the stick.

Is that accurate?

A I think it is, yeah.

Q And if you look at the top of column 3, it says: In order to provide structure to the deodorant stick composition, the formulation may also include a number of waxes and other structurants. However, the structurants used may lead to deodorant sticks that are very hard. For example, a currently marketed product, comparative formula 1 below, has 34.15 percent liquid triglyceride along with a number of structurants resulting in a very hard stick, scoring 63 on a needle penetration test under ASTM D1321 as described herein.

And then it continues: Comparative formula 2 contains even higher levels of structurants resulting in a harder stick with a lower hardness score.

Do you see that?

A Yes.

Q And so here, the inventors are saying that it's the high levels of structurants that contributed to the overly hard structure of the

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comparative formulas, right?

A No. What they're saying is they know it's a high level of structurant. As I explain in my report, this is not just a case of putting things together, arithmetically calculating things. These structures that you get, wax structures are -- basically what you have is wax crystals that are flocculated, and it depends on the size and shape and the right crystals and how they flocculate. And they have to be put together so you get -- that's what determines not just the hardness or all the other properties of the stick that make a useful product, so it's important to get not just the structurants but the whole formulation just right because anything in that formulation could knock it off and change that crystal structure. But someone skilled in the art would, with the proper instructions, could actually reproduce that structure.

Q Okay. But that's knowledge that you brought to this patent as someone skilled in the art, correct?

A No, it's knowledge that I would expect someone skilled in the art -- remember, I teach all levels, and this is kind of some of the stuff

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I teach, that I'd expect someone skilled in the art to be able to do that.

Q Now, if you turn back to claim 1 at the end of the patent, would a deodorant stick with the three ingredients, at least 25 percent liquid triglyceride, at least one antimicrobial, and a primary structurant with a melting point of at least 50 degrees C, would that deodorant be stable?

MS. JEFFRIES: Objection. Vague.

A It --

MS. JEFFRIES: Incomplete hypothetical.

A If you followed the instructions in the patent, you could make a stable stick. But of course -- yeah, if you followed the instructions, a person of ordinary skill in the art would know a stick was stable.

Q How would the person of ordinary skill in the art know that?

A By looking at it. By putting the thing together and saying, yeah, does it -- is it exuding liquid, for example. Is it separating in some way. They would know that. That's part of what a person of ordinary skill in the art would do. They'd use this to put together the stick

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and, as they put it together, they'd know whether it was stable or not.

Q And then let's say they saw it was not stable, how would a person of ordinary skill in the art have gone about making it stable?

MS. JEFFRIES: Objection. Incomplete hypothetical.

A A person of ordinary skill in the art would follow the instructions in the patent and adjust the formula as necessary.

Q Well, what does the patent tell the person of ordinary skill in the art to do to make it stable?

MS. JEFFRIES: Objection. Incomplete hypothetical.

A The patent actually lays out how to make a stick. And it lays out the ingredients in the stick. It lays out how to select the ingredients, how to put them together. And a person of skill in the art with that information would know how to make a stick and know how to know -- and know when it was stable.

Q So just to be clear, though, claim 1 with those three ingredients might -- that deodorant stick might be stable or it might be unstable,

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right?

A Well, claim 1 doesn't stand alone. I've said before, you have to read it in the context of the patent. And the context of the patent says, for example, if you -- if you don't follow the instructions and you add some water, you don't take all the water out. That's what it tells you. You could make an unstable stick just because you haven't taken all the water out. So you have to follow what -- the instructions in the patent, and then you'll know whether you've got a stable stick or not.

Q Would all deodorants made according to the instructions in the patent be stable?

MS. JEFFRIES: And asked and answered. Incomplete hypothetical.

A Not necessarily. The patent describes how to make a stable stick. But a POSA would know when the stick was stable and when the stick is unstable. That's what you expect from a POSA.

Q So a stick made with the ingredients in claim 1, according to the patent, might be stable or unstable, correct?

MS. JEFFRIES: Objection. Mischaracterizes testimony.

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A No, I think if you follow the instructions of the patent, you make a stable stick. But like everything else, there might be some case where you could make a stick that bled, for example.

Q Well, what in the patent specifically guarantees that the stick would be stable, in your view?

A List of ingredients, a POSA would know which ingredients -- it tells which ingredients to use. It tells you how much to use. It tells you how to use them and how to make and use them, and you follow the instructions. And -- well, if they didn't make a stable stick, it wouldn't be a patent. So it tells you how to make a stable stick. But if the stick was unstable, a POSA would recognize that that stick was unstable. And that's what I'm saying.

Q And would a POSA be able to --

A Let me, these structures, remember, are flocculated structures. They're loose structures. And what you do is you get a loose flocculated structure that traps a liquid and metastases. And sometimes slight changes can actually give you an unstable stick.

But what this patent tells one is how to

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make a stick, and a POSA would know when it was stable and when it was unstable. And, you know, it tells you how to make a stable stick.

Q And did you do any testing to see whether the sticks made according to this process were stable?

A No.

Q And is there any stability testing disclosed in this patent?

A No. Not that I know of.

Q Okay. And you're concluding based on the absence -- without any stability testing whatsoever, without doing any testing of your own, and without reviewing any reported testing, you're concluding that all sticks made according to this patent are stable?

MS. JEFFRIES: Objection. Mischaracterizes testimony.

A No, I'm not making that assumption. I'm telling you that the patent tells you how to make a stable stick. And if something was -- if you modified the formula or are putting it -- I think what you're asking was, how would you know whether it's unstable or not. A POSA would see the instability. But what this does is it teaches you

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how to make a stable stick. It says if you follow these instructions, you can make a stable stick.

Q And where does it say that the stick will be stable?

A Well, it says a deodorant stick, and it gives you a hardness range. And the hardness range then tells you that you made a stick with that hardness.

MS. JEFFRIES: So, Josh, we've been going a bit over an hour. When convenient, can we take a short break?

MR. CALABRO: Yeah, I'm fine taking a break now. How long do you want or how long do you want, Dr. Lochhead.

MS. JEFFRIES: I would say maybe 10 minutes maybe just to use the restroom, if that's okay.

MR. CALABRO: That's fine. Let's go off the record.

(A short break was taken.)

Q Welcome back, Dr. Lochhead. Did you discuss anything on the break?

A Did I discuss anything? Yeah, yeah.

Q What did you discuss and with whom?

MS. JEFFRIES: Object to that and instruct

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the witness not to answer anything that would reveal any attorney work product or confidential information. You can answer generally.

A Yeah, that's what I did. We talked niceties and pleasantries, and that's about it.

Q Did you discuss anything about the substance of your testimony?

A No.

Q I want to circle back to our last exchange. The question was: Where does it say that the stick will be stable? The answer was: Well, it says deodorant stick, gives you a hardness range, and the hardness range then tells you that you made the stick with that hardness.

So is it the case that a stick with a given hardness is stable?

MS. JEFFRIES: Objection. Mischaracterizes testimony.

A You wouldn't normally go to a hardness test unless the stick was completely stable, and the instructions tell you to hold the material for 24 hours, at least 24 hours, and then do the hardness test. But I think a POSA would know when it's a stable stick.

Q And let's turn back, please, to Table 1 in

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the '915 patent that we've marked as Exhibit 1. It's in column 3. And you see the comparative formulas there, right, Dr. Lochhead?

A Yes.

Q Now, are those complete deodorant sticks?

A Well, the patent says that they're complete deodorant sticks, yes.

Q Okay. But the patent says there were issues with these sticks; they were too hard, right?

A Yes. The comparative formula 1 and comparative formula 2 were too hard. They were complete deodorant sticks, but they were too hard. They didn't meet the hardness requirement that the patent -- the patent specifies.

Q And so there was a motivation to make them better, to make them less hard, right?

A That's correct.

Q Do you -- and then if you look, again, still on Table 1, you see the comparative formulas as well as the inventive examples have arrowroot powder, right?

A Yes, a comparative example. Inventive formulas 1 through 4 have arrowroot powder, yes.

Q And is arrowroot powder a structurant in

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the context of the patent?
MS. JEFFRIES: Objection. Incomplete hypothetical. Beyond the scope.
A The purpose of adding arrowroot powder is to absorb sweat, absorb water. And the use is a structurant. It's not defined as a structurant. But will it effect the structure? It could. You know, many of the ingredients could affect the structure.
Q And turn, please, to column 12 in the '915 patent. Line 20, do you see it refers to periodic calibration should confirm, and then it lists certain things that are confirmed through this calibration?
A Oh, yeah. Periodic calibration confirm, yeah, that the instruments are clean from dust and grime.
Q What does periodic calibration mean?
A Well, if you're making measurements, and we do this with all our instruments, they really need to be calibrated to make sure that the measurement you're making is accurate, and some instruments need to be calibrated after every measurement. Some instruments need to be calibrated once a day, twice a day, once a week.

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In my lab, that was normal procedure. That was a very important thing to do is to calibrate the instruments to make sure that they were correct. For example, I ran the first NMR in Scotland, and we had to shim the magnets after -- before and after every measurement. If we were to do that for MRI today, I think it would take -- we'd never be able to get all the MRIs done. But basically what you have to do is calibrate your instruments to make sure they're measuring accurately.
Q And then under periodic calibration, it says in the third paragraph: Ensure the total weight of the shaft and needle is 50 plus or minus .2 grams when the shaft is in free-fall?
A Yes.
Q So why would periodic calibration be used to confirm the weight of the shaft and needle?
A Because that's critical to measuring hardness. If you change the weight, you're going to get a wrong reading.
Q And if you go up to column 10, please, at the bottom around line 57, and it says: Non-limiting examples of other optional materials include emulsifiers, distributing agents,

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antimicrobials, pharmaceutical or other topical active, preservatives, surfactants, chelants, and so forth. Examples of other optional materials are described in, and it lists three patents, which descriptions are incorporated herein by reference.
Do you see that?
A Yes.
Q Did you review those patents in connection with your work on this case?
A No, I did not.
(Deposition Exhibit Number 2 marked for identification.)
MR CALABRO: So I'm going to mark as Exhibit 2, U.S. Patent No. 5,019,375, Tanner, et al., that's referenced there.
MS. JEFFRIES: So, Dr. Lochhead, you won't have this paper copy. This is not something that's in the record as far as I'm aware. So you will -- if you can, use the chat feature here to see this patent.
Q Yeah, let me know if you have any issues downloading it. It should be in the chat on the Zoom?
MS. JEFFRIES: I'm not quite sure how

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to --
A I've got it, yes.
Q If you double click on it, it will open up.
MS. JEFFRIES: Hang on. Mine is not opening. Just give me a second. It's somehow only wanting to download. I guess I have to download it. Okay.
Q So, Dr. Lochhead, if you just match up the numbers on this patent with the '915 patent description we just looked at, can you confirm that this is the Patent No. 5,019,375 to Tanner, et al., that's mentioned in the '915 patent?
A Yes, yes.
Q Then you see in the upper left-hand side of the -- I'll call this the '375 patent. The assignee is the Procter & Gamble Company, right?
A Yes.
Q And this is one of the patents that the '915 patent incorporates for optional materials like antimicrobials that can be incorporated in the '915 patent, right?
A Yes.
Q If you look at the abstract of the '375 patent, it refers to antiperspirant cream

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compositions, right?
A It does, yes.
Q Halfway down it says: They may be formulated to have relatively high viscosities, include volatile silicone material, a particulate, antiperspirant active, a clay thickening agent, an activator for the clay thickening agent, various other materials. Right?
A Yes.
Q So, now, the '915 patent relates to natural deodorants, right?
A This '915 patent here?
Q Yeah, I'm --
A '915 patent?
Q I'm switching back and forth.
A Sorry.
Q The '915 patent, it relates to natural deodorant sticks, right?
A Yes.
Q So substantially free of silicones in at least in some of the claims?
A Substantially free of silicones and free of aluminum, yeah.
Q And in formulating those natural deodorants, though, the inventors still looked to

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other references like the '375 reference that has silicone material in it, right?
MS. JEFFRIES: Objection. Mischaracterizes the document and the record.
A I think what it actually says in the '915 patent, it says non-limiting examples include emulsifiers, et cetera, et cetera, and so forth. And examples of optional materials that are described in, it doesn't -- that's actually what it says, a non-limiting example.
Can you ask your question again, please?
Q So the inventors of the '915 patent, in formulating their natural deodorant sticks, they still looked to references that relied on silicone for the formulation?
MS. JEFFRIES: Objection. That's mischaracterizing the document and the record.
A They allude to other formulations to see how to put other formulations together, and that's what a POSA does. They notice a particular area and they look at other formulations to see how to put them together. And what they use -- they would also know what not to use.
Q Right. But one of the references with other formulations had silicone in the

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formulations; and that didn't exclude it from the universe of references that a POSA would look to, correct?
A No, a POSA could look at -- a POSA is being guided by in the patent, in the context of the patent, it says you can look here, you can look there. A POSA would know what to look at and what not to look at.
Q And I'll direct your attention, please, to column 2 in the '375 patent, around line 2, 2 or 3. And the first full paragraph in column 2 refers to a patent number, the Nabial issued in 1984, and says that patent describes deodorant sticks containing an antiperspirant active.
Do you see that?
A Yes.
Q And what does it mean for a deodorant stick to contain an antiperspirant active?
A I opined on this and "contains an antiperspirant active" means it contains an aluminum.
(Deposition Exhibit Number 3 marked for identification.)
Q I want to drop into the chat, you probably have a hard copy, Exhibit 3, U.S. Patent

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No. 11,497,706. It's the '706 patent.
Let me know when you've got that up, please.
A I've got it.
Q And you're familiar with this patent, right, Dr. Lochhead?
A Yes, I've read it.
Q This is the '706 patent that's at issue in one of the IPRs?
A Yes.
Q And the title of this patent is: Antiperspirant and Deodorant Compositions, right?
A That's right.
Q And then in column 1, at the top it says: Field of the Invention. It says: The present disclosure relates to antiperspirant and deodorant compositions and methods relating thereto.
Do you see that?
A Yes.
Q And that's an accurate description of the field of this invention, right?
A Yes.
MS. JEFFRIES: Objection. Vague.
Q And then --
A That's what it says. That's what it says

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in column 1, Field of the Invention.
Q Then in -- if we stay in column 1, do you see there's a section entitled Background of the Invention, right?
A I see that, yes.
Q And then I'm going to read some language from that section and ask you if it's out here. So column 1, line 22, while aluminum is highly effective as an active, there is consumer interest in antiperspirants and deodorants that do not contain aluminum.
Was that accurate?
A There's consumer interest, yes, in antiperspirants -- consumers, some consumers are -- don't like aluminum. They don't want aluminum in their products.
Q Then the next sentence says: Consumers are also seeking more natural products, complete with fragrances that are mostly natural or essential oil based. They are further seeking products with lower irritation than they have experienced with baking-soda-based products.
Were those sentences accurate?
MS. JEFFRIES: Objection. Vague.
A That's what the patent tells us. And yes,

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I've seen -- generally I've seen people who have said those things. I've seen references to people who are seeking product with lower irritation. And, yeah, I've seen that.
Q Okay. And then if we go to line 33, still in column 1, it says: And products formulated with baking soda, which has a relatively high pH and high water solubility, can increase irritation, even for consumers with moderate sweat rates. Highly water soluble alkaline powders contribute negatively toward natural or essential oil stability as well, especially in a hot process needed to melt waxes.
Was that accurate?
A Can we take this one at a time?
Q Sure. Yeah.
A Products formulated with baking soda with a relatively high pH can increase irritation, yes, I've seen reference to baking soda increasing irritation.
Highly water soluble alkaline powders contribute negatively towards natural essential oil stability, that's also correct. They can interact with the essential oils and react with the essential oils over time.

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Q And then the last -- and high water solubility powders can also lead to gritty products as the water-soluble powders can agglomerate when exposed to moisture released from powders during the hot batch process.
Do you see that?
A Yes.
Q Was that accurate?
A Well, that's what this patent tells us. And it actually tells us again in the part that was just looked at how to make it to avoid water, you'll get gritty products.
Q Okay. Now we're going to jump ahead to column 10 of the '706 patent. That will be marked as Exhibit 3.
A Okay. I'm there.
Q So line 31, it says: The present invention may include one or more antimicrobial compositions, and then it lists a number of antimicrobials.
Do you see that?
A Yes.
Q And then in the next paragraph, it says: In general, the total amount of antimicrobial used in the present invention may be from .1 percent to

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about 30 percent by weight of the deodorant.
Do you see that?
A Yes.
Q Is that accurate and consistent with your understanding of these inventions?
A Yes, I've seen that. But generally, for deodorants, it would be a much lower concentration.
Q Well, why would P&G say up to about 30 percent?
A I don't know.
Q And then it says specifically around line 50, 49: Others could be as high as about 25 percent, such as if using magnesium hydroxide.
Do you see that?
A Yes.
Q And is that accurate?
A Well, they're telling you that in the patent, you could use up to 25 percent. To my knowledge, up to my experience, generally much lower levels of these kind of activities are used in deodorants.
Q Well, why was P&G saying you can use up to 25 percent?
A I don't know.

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Q Do you think they made a mistake?
A I don't know. I don't think they made a mistake, but I don't know why they put in those concentration ranges.
Q And you see in the list of antimicrobials, line 35, for example, has magnesium hydroxide and line 40 has baking soda and line 34 has zinc carbonate.
Do you see those three?
A Zinc carbonate, baking soda ...
Q And magnesium hydroxide --
A Partially carbonated magnesium hydroxide. Is that what you're talking about in line 40?
Q Line 35 has magnesium hydroxide.
A Okay. I got it, yes.
Q Just establishing that you see those three antimicrobials listed.
A Yes.
Q Okay.
A The antimicrobials, zinc carbonate, magnesium hydroxide, and baking soda, right?
Q Right.
Now let's turn to column 16, please, and line 20.
A Okay.

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Q You see there's a section here with the heading Antiperspirant Active?
A Uh-huh.
Q Okay. And if we jump down to line 40, it says: The antiperspirant active for use in anhydrous antiperspirant compositions of the present invention may include any compound, composition, or other material having antiperspirant activity.
Do you see that?
A Yes.
Q Okay. And then the next sentence says: More specifically the antiperspirant active may include any of the antimicrobials discussed above or may include a stringent metal salt, especially inorganic and organic salts of aluminums, zirconium, and zinc as well as mixtures thereof.
Do you see that?
A Yes.
Q And is that accurate?
A Well, what it's telling you is if you're making an antiperspirant, you need to add stringent aluminum salt or aluminum zirconium complex. You can add other antimicrobials, but you must have aluminum.

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Q Let's take a closer look at the sentence. It doesn't say you must have aluminum, right?
A A POSA would understand that you have to have aluminum. It's not an antiperspirant if it's not aluminum.
Q Well, line 45 uses the word "or." It doesn't say "and you must have aluminum." It says the antiperspirant actives may include any of the antimicrobials discussed above or may also include a stringent metallic salt, especially, and it continues to mention aluminum and zinc salts.
Right?
A And as I said, as a POSA, I would understand aluminum is necessary, it's essential if you're making an antiperspirant.
Q Why --
A That's -- in this country, you can't make an antiperspirant if it doesn't contain aluminum or aluminum zirconium because antiperspirants are drugs.
Q Why would P&G use the word "or" and say it may include antimicrobials or aluminum?
A I don't know.
Q Why would P&G say it could include zinc salts?

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A I don't know. I could guess they're saying you could include it. Of course you can include it. But you have to have aluminum there. And you can add other things. You can include it, and that's what it says. You can include it. You can include lots of things.
Q But just to be very clear, the patent does not say you must have aluminum and you may include other things. It says you may include antimicrobials, aluminum salts, or zinc salts, correct?
A But a POSA would understand if you're talking about an antiperspirant, it has to have aluminum.
Q Well, I understand your position. But I just want to be very clear about what P&G said in its patent, sir, so --
A You know, it's not just what P&G says. It's how does a POSA read it. If I'm a person of ordinary skill in the art, I would understand you have to have aluminum. And what this is telling you is you can include those other antimicrobials, and all it's saying you can include them. And then you can include all sorts of aluminum salts, but we know you have to have aluminum. It's not

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an antiperspirant if it doesn't have aluminum or an aluminum complex.
Q But just to be very clear, the patent doesn't expressly say that?
MS. JEFFRIES: Objection. Asked and answered.
A It doesn't have to because a POSA would understand that.
Q Okay. But it's not there, right, in the language of the patent?
A It says -- let's read this. It says that these can be included. They may include any of the antimicrobials discussed above. It doesn't say only them. It does say, it says they may include. But a POSA would know to be an antiperspirant, it has to have aluminum, so ... it say "may include." It doesn't say they're the antiperspirant, the only antiperspirant active.
Q I want to -- you -- if we jump to the claims of the '706 patent on the last page, are you there?
A Yes.
Q And you opined on written description support for some of these claims, specifically claims 16 to 23, right?

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A I think so. Can I see my report to make sure that --
Q Yeah, refresh yourself with your report.
A Yeah, check things here. Okay. Claims 16 to 23, yes. I've got one paragraph that says this.
Q Okay. So in your view, these claims have adequate support in the priority application, which is -- we refer to as the '647 patent, right?
A Yes, that's what I said in the second-to-last page of my -- the third-to-last, page 71, I said it.
(Deposition Exhibit Number 4 marked for identification.)
Q I put -- you probably have a hard copy, but I put the '647 patent in the chat. We'll mark it as Exhibit 4, and I'd like to discuss the support for these claims in the '647 patent.
A '647 patent. I'm trying not to get the documents all mixed up. Okay. I have the '647 patent.
Q Let's focus on claim 16 in the '706 patent --
A '706 patent, okay.
Q Yeah, just keep them both in front of you

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because we're going to be going back and forth.
A Okay.
Q Okay. So we'll start with stearyl alcohol. And in the '647 patent, can you show me where the patent tells a POSA -- gives a POSA a reason to use stearyl alcohol specifically in this claim combination of ingredients? And you can point me to whatever you need to, but I'll direct your attention specifically to claim 16 of the '647 patent. And I'll note that line 9 to 10 mentions stearyl alcohol as a non-limiting example of a suitable primary structurant.
So the question again is: Where in the '647 patent does it give a POSA a reason to use stearyl alcohol specifically in this combination of ingredients that form the deodorant?
MS. JEFFRIES: I'm just going to object as vague. But maybe, Josh, I misunderstood something. You referenced claim 16 of the '647.
MR CALABRO: Of the '706. I misspoke.
MS. JEFFRIES: Maybe you could --
Q Where in the '647 patent does it provide a POSA a reason to use stearyl alcohol specifically in the combination of ingredients as in claim 16 of the '706 patent?

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A Yes. Again, it says non-limiting examples include stearyl alcohol, beeswax, for example. And earlier on, it described what -- the property of the structurant you're looking for, and then later it tells you how to use them. So basically, yeah, it tells a person of ordinary skill in the art that they could use stearyl alcohol in this invention and use it in the way it's described to get the result that the patent claims.
Q But what would the POSA's rationale be for distinguishing stearyl alcohol from the other listed structurants? Like you mentioned beeswax, for example? Why is the POSA going to pick stearyl alcohol over beeswax or any of the others?
MS. JEFFRIES: Objection. Incomplete hypothetical and misleading.
A Well, what the patent says is you can use these, if you use them the way the patent describes them, and it leads a -- a POSA would understand they could use the stearyl alcohol, if it has the right properties, put it in there. Or beeswax so they've listed -- they've actually directed to what structurant is available. And, of course, if there are other structures that don't appear on this list, they haven't directed

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attention to them.
Q So a POSA would understand that beeswax or stearyl alcohol could be -- could both be used and they could be used interchangeably?
MS. JEFFRIES: Objection.
Mischaracterizes testimony.
A No, I don't think they could be used interchangeably. They could both -- they could each be used. They could each be used in the way that's described and to get the desired stick. And what the POSA would do would take -- they've identified that stearyl alcohol as a potential structurant. It's showing you how to use it, and a POSA would put it together and get the expected result.
Q And claim 16 of the '706 patent also mentions beeswax, which we've talked about in the context of the '647 patent. And where in the '647 patent does it tell a POSA to use stearyl alcohol and beeswax in the same composition?
A Well, stearyl alcohol and beeswax are both listed as structurants, and the POSA would have the option of using both of them in a composition --
Q Is there --

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A -- individual ones in the composition to get the result.
Q Is there any reason the POSA would use both?
MS. JEFFRIES: Objection.
A The reason is there -- that they're giving here as examples of structurants that could be used and the patent tells them how to use it.
Q And where in the patent does it tell them how to use stearyl alcohol and beeswax?
A In which patent are you talking about? '706?
Q '647. The specification is the same, but '647. Where does it tell the POSA how to use stearyl alcohol and beeswax together?
A In column 19 and 20, method of making.
Q But these don't relate to the stearyl alcohol and beeswax combination specifically, right?
A Yes, they do. They write to primary structurants, and beeswax and stearyl alcohol are listed as primary structurants.
Q Well, why doesn't the patent give guidance on which ones to select and how precisely to combine them? Wouldn't that be difficult for a

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POSA?
A No, no. A POSA reading the method of making would know how to -- would understand how to make it. And then you would look and say what structurants can I use, and that's when you would look at the possible structurants you could use, and you would then try those structurants.
Q And how would he go about choosing the ones to try?
A Well, the patent tells him which ones -- it's got a list of the ones you can try here, and he could choose which ones to try and put it in the method of making.
Q Wouldn't it be difficult for a POSA to pick from the list of possible structurants to arrive at a structurant or combination of structurants that's actually going to work?
A I don't think it would be difficult because you're told which structurants -- which structures to choose and how to put them together to make it work.
Q And by "work," what do you mean?
A To make an acceptable deodorant stick.
Q And the POSA is going to use his or her own experience to determine the precise amounts of

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the structurants to use, correct?
MS. JEFFRIES: Objection.
Mischaracterizes testimony.
A No, I don't think so. I think the patent -- the '647 actually somewhere tells you that the range of weights of structurant and other things you can use and also gives -- yeah. It also gives an example of, in Table 4, of the types of concentrations that could be used, but it also gives range.
Q So let's -- let's go back to the '706 patent and look at the ingredient D, magnesium hydroxide, right, in claim 16?
A Hang on a second. Just got my papers mixed up. Yes, '706, where are you asking me to go?
Q '706, claim 16, do you see ingredient D is magnesium hydroxide?
A Yes.
Q Okay. And if you flip back to the '647 --
A Okay.
Q -- and column 11 near the bottom, there's a section E, antimicrobial activity?
A Yes.
Q Okay. And I'll read some of this text:

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Table 2 below shows raw material microbial inhibition concentration data tested against two key underarm bacteria strains. As can be seen, the first three listed antimicrobials -- lupamin, hexamidine, and piroctone olamine -- perform particularly well against the bacteria as raw materials. Also performing well as raw materials, and there's a few others, one, two, three, four, five, six, seven others, I'm not going to pronounce them all, and it says: Also performing moderately well against the bacteria as raw materials were magnesium carbonate and magnesium hydroxide and calcium carbonate.

Do you see that?

A Yes.

Q So how does the '647 patent tell a POSA to use magnesium hydroxide specifically as an antimicrobial in the '706 patent, claim 16's combination?

MS. JEFFRIES: Objection. Mischaracterizes the record and the law.

A Well, it shows -- in the Table 2 especially it shows -- first of all, it says what can be used. And then it shows in the table what are effective, which of these are effective

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against the particular bacteria, the strains that give rise to underarm odor.

And the -- so it shows that -- which of these -- basically you could choose any of the ones that are shown. But then there are other considerations that you need to take into consideration. For example, irritation. You know that some of them may -- if you know that some of them may irritate, a POSA would not use them. So if they've got the right antimicrobial activity, that's not a stand-alone thing. A POSA would say, well, I need to take things that are not an irritant as well, for example.

Q So what would be the rationale for distinguishing magnesium hydroxide from the other listed antimicrobials, including ones that perform better like piroctone olamine?

MS. JEFFRIES: Objection. Asked and answered. Incomplete hypothetical.

A Formulation considerations, availability, regulations. These are the kind of things that a POSA would have to take into consideration when they're making these things. The patent tells you these things can be used and how to use them, but there are other requirements that a POSA would

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know of, things like regulation spectra and what they're going to use and what they're not going to use.

Q You mentioned formulation considerations. What formulation considerations would a POSA know of that would inform a POSA's decision?

A Are these things liquid or solid? How to add them. You're actually given the instructions on how to make the thing, but that's -- normally that's what a POSA would do, you look and say, well, what are the physical characteristics or chemical characteristics. Would you expect to get an interaction between the ingredient, for example.

Q And a POSA would know all this?

A Yeah, a POSA is making this stuff -- a POSA would understand what to -- they might not know from the top of their head, but they'd know where to find it. They'd know where to look.

Q And turn back, please, to the '706, claim 16. You see there's sunflower seed oil and jojoba seed oil as the last two ingredients there.

A Jojoba seed oil and sunflower seed oil, yes.

Q Flip back, please, to the '647 patent,

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column 18, and lines -- in column 18, lines 41 to 44, this is discussing consumer preferred emollient being liquid triglyceride. It goes on to list a bunch of additional emollients that may be used. And then on line 44, specifically it mentions sunflower seed oil and jojoba seed oil, right?

A Yes.

Q And what would be the basis, a POSA's basis for choosing those two as opposed to any of the others, say avocado oil, canola oil, or anything else that's listed there?

A Differences in cosmetic attributes. So the POSA would say here's the list of emollients I can use, which ones will I use, and what are the cosmetic attributes in choosing that. And then I'd fit it into the formula as expected. I'd be looking for different things. For example, sunflower seed oil oxidizes much more readily than jojoba oil, and that's something you'd have to take into consideration depending on your application. Other cosmetic attributes, you take that into consideration. And a POSA would know what cosmetic attributes they're looking for.

Q But to make the combination that's in

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claim 16 of the '706 patent, which has eight or nine different ingredients, wouldn't the POSA need guidance on that specific combination?
MS. JEFFRIES: Objection. Vague. Incomplete hypothetical.
A The question is to meet that specific formulation?
Q Yeah.
A If a POSA was given that particular formulation and the instructions on how to make it, they could make that particular formulation. But in looking at the formulations that are possible in the context of the written description of the patent, a POSA would also know to look at the context of the patent and say what other things are available, and the patent would tell them.
Q And would different POSAs get to different combinations of ingredients in different concentrations?
MS. JEFFRIES: Objection. Incomplete hypothetical. Misstates the law.
A I don't understand your question. Sorry. Could you ...
Q So for written description, the POSA

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doesn't have this claim 16 in front of him or her. So I'm asking why -- wouldn't the POSA need some guidance in the written description in the '647 patent on those specific -- on that specific combination, like here's how to combine these eight or nine ingredients in these amounts to make a deodorant? Wouldn't a POSA need more guidance on how to do that, how to make that specific combination and the amounts that are required?
MS. JEFFRIES: Object that it calls for legal conclusion.
A I'm still not sure what you're asking. Sorry. Could you say it some other way? You're asking a POSA, they need to make that specific --
Q Yeah, so to arrive --
A -- that specific formulation.
Q To arrive -- you see claim 16 has eight or nine different ingredients listed out in a combination, right?
A Uh-huh.
Q And these ingredients are each separately identified in the '647 patent, but they're not combined into a single formulation, right?
A Right.
Q So wouldn't -- wouldn't -- to make the

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'706 formulation, wouldn't a POSA need that kind of guidance? Like, wouldn't the POSA need the '647 patent to identify this particular combination in the particular amounts of each of these ingredients that the formulation requires?
MS. JEFFRIES: Just object as calling for a legal conclusion and misstating the law.
A No. To make that particular -- if the POSA had the instructions in the '706 patent and the formulation -- and the claim, they could put those things together to make that. Going from the '647, they're given the choice of materials to use. They're switching from one patent to another. The materials are here. They're given the choice of using those materials, and they're taught how to do it. And that's how they actually develop a formulation that became a claim.
Q And that's essentially what I'm asking. So a POSA, in my question, doesn't have the '706 claim with all those ingredients listed in the combination; he or she just has the '647 patent disclosure. And is the listing of those ingredients enough for the POSA to get to a formulation in the '706 patent claim?
MS. JEFFRIES: Objection. Asked and

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answered. Same objections as earlier as well.
A Yeah, I'm having trouble understanding your question. But yeah. If you're given the claim and the instructions, you can follow and make that -- and use that claim. If you're not given the claim but you're following the context of the patent, a formulator may or may not come up with that exact formulation. But what they do is come up with a formulation. I think that's the question you were asking. I'm not sure.
(Deposition Exhibit Number 5 marked for identification.)
Q I'm going to mark as Exhibit 5, I'm going to drop it in the chat. You probably already have it, U.S. Patent No. 11,433,018. I haven't been tracking the time, but just let me know if you need a break.
MS. JEFFRIES: Yeah, it's been over an hour. The next convenient time, whenever, if you're switching topics, now would probably be a good time. Or if you want to continue, as long as Dr. Lochhead is okay.
A Yeah, I'm just separating -- I've got my papers mixed up again.
MR. CALABRO: I'm going to switch topics,

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so why don't we take 10 minutes or 15, whatever you need.
MS. JEFFRIES: Okay. Sounds good. Thank you.
(A short break was taken.)
Q Dr. Lochhead, pull up what I marked as Exhibit 5, please, U.S. Patent No. 11,433,018. I think this is Exhibit 1003 from the IPRs.
A Got it.
Q Okay. And you recognize this as the Lesniak reference that's at issue in the IPRs, right?
A I do.
Q And let's start with the abstract on the front page of Lesniak. And you see here, Lesniak provides an overview of his invention, right? Or her invention, I'm not sure.
A Yes, yes.
Q And it's an anhydrous personal care composition comprising, and then it lists four ingredients, (a), (b), (c), and (d), right?
A Yes.
Q Okay. And so let's just check off these ingredients: (a) is 45 to 60 percent by weight of at least one ester selected from a group that

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includes triglycerides, right?
A That's right, diglycerides and monoglycerides.
Q Sure. (b) is a first wax having a melting point from 35 degrees C to 75 degrees C. That's in an amount of 5 to 25 percent by weight, right?
A Yes.
Q And (c) is a second wax having a melting point of 73 to 90 degrees C present in an amount of .5 to 15 percent by weight. Right?
A That's right.
Q And then finally (d), the fourth ingredient is at least one plant oil having a certain saponification value in the amount of 5 to 35 percent weight, right?
A Yeah, it specifies a saponification value, yes.
Q Okay. And then go to column 5, please.
A I'm there.
Q And then in line 33, it says: Therefore, in one aspect, there is provided an anhydrous personal care composition comprising, and then it lists (a), (b), (c), (d), the four ingredients we just looked at in the abstract, right?
A Which -- where in column 5? Sorry. I've

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lost it.
Q No worries. Line 32 or line 33. I just want to confirm that the inventive composition they're talking about here has the four ingredients we were just looking at in the abstract?
A One ester selected from one triglyceride, yeah. Yes, it's got these four ingredients.
Q Okay. And then in the next paragraph, when it's talking about that composition, it says, starting at line 49: The present inventors have surprisingly found that in addition to having good micro-robustness, such compositions have reduced greasiness and improved after feel, such as reduced tackiness and drag on the skin as compared --
A Wait, wait, where are we looking?
Q Line 49 in column 5. It's right below the paragraph.
A I thought you said column 6.
Q I may have. It's line 49, column 5. Are you with me?
A Yes.
Q So it's beneath the paragraph we were just looking at that had the compositions with the four

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ingredients. And it says: The present inventors have surprisingly found that in addition to having good micro-robustness, such compositions have reduced greasiness and improved after feel, such as reduced tackiness and drag on the skin as compared to other anhydrous compositions. Such compositions are also physically stable at high and low temperatures.
Do you see that?
A Yes.
Q So, here, Lesniak is at least reporting his compositions we looked at are physically stable at high and low temperatures, right?
A He's saying those compositions are stable at high and low temperatures. But, of course, in another place, he actually points to ones that are stable, which are stable and which are unstable.
Q And we'll get there. At least here, he's reporting these compositions are physically stable at high and low temperatures, correct?
MS. JEFFRIES: Objection. Mischaracterizes the document.
A Well, no, he's giving a general range. And then he says they're stable. But later on he says that in some cases, they became unstable.

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Q And we'll get there. And then it continues: The present inventors have also surprisingly found that the amount of white residue remaining on the skin following application of the composition is reduced when the composition comprised a first wax having a melting point of 35 to 72 degrees C and a second wax having a melting point of 73 degrees C to 90 degrees C, right?

A That's what it says, yes.

Q Okay. And then still talking about the same compositions: Present inventors have also surprisingly found that such compositions are also physically stable, i.e., do not exhibit separation into a bulk solid portion and bulk liquid portion when stored at 49 degrees C, zero percent relatively humidity for a period of 13 weeks, and was stored at 40 degrees C/75 percent relative humidity for a period of 13 weeks and show acceptable dispensing characteristics in addition to being non-greasy. Right?

A Yes.

Q That's what he reports. And now on column 7, line 22, it's referring to the waxes. And it says: In certain embodiments the first wax

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is beeswax and the second wax is hydrogenated castor oil.

Do you see that?

A No. Where are we? Column 7, you said?

Q Column 6, line 22.

A Column 6 line 22, okay.

Q In certain embodiments, the first wax is beeswax and the second wax is hydrogenated castor oil.

Do you see that?

A Yes, yes.

Q Now let's go to the table with the stability testing, Table 2 in column 11. Are you there?

A Yes.

Q Table 2. So here Lesniak tested 11 compositions, right?

A Yes.

Q And nine of them have an asterisk, right?

A Yes.

MS. JEFFRIES: Objection. Vague.

Q The asterisk denotes a comparative composition, right?

A It does.

Q And two of the compositions do not have an

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asterisk, right?

A Yes.

Q And those two compositions, without the asterisk are the only two with hydrogenated castor oil, which says Castorwax MP-80.

Do you see that?

A That's right. It contained a small amount of Castorwax.

Q And Castorwax is identified by Lesniak as a secondary wax with a higher melting point than the first wax, right? In the same column 6, lines 16 to 23.

MS. JEFFRIES: Just objection. Mischaracterizing the record and the document.

A It just says the second wax has a melting point of 77 to 85; second option, 73 to 83. It doesn't say Castorwax.

Q We just looked. It says in certain embodiments, the first wax is beeswax and the second wax is hydrogenated castor oil.

Do you see that?

A Where?

Q Column 6, line 22 to 23.

A Yes, in second embodiments. Yes, in second embodiments.

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Q The first wax is beeswax, the second wax is hydrogenated castor oil, right?

A Yes.

Q So then if we go back to the table, the only two compositions that's a secondary wax with a melting point in Lesniak's range are 8 and 11, right?

MS. JEFFRIES: Objection. Vague.

A Could you say the question again, please? The only two ...

Q Compositions with a secondary wax with melting point within the ranges disclosed by Lesniak are compositions 8 and 11?

A The only two compositions with Castorwax are 8 and 11 is present at 2 percent, yes.

Q And 8 and 11 both passed all of Lesniak's tests, including high temperature stability, right?

A Yes. As far as I know, so did all the others, all the other compositions have all of Lesniak's requirements. And what was the second part of your question? Sorry. They're compositions with the same ingredients, all of them.

Q Well, let's get to that. Which -- what is

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the -- remember we looked at the four ingredients, one of which is a second wax having a melting point of 73 to 90 degrees C present in an amount of .5 to 15 percent by weight. And where is the second wax in all of the other compositions? Which wax is it?

A Could I have your question again, please? I just want to make sure I get it right.

Q Your answer was all the other compositions have all of Lesniak's requirements. And my question, though, was: Where in the nine comparative examples is the secondary wax with a melting point of 73 to 90 degrees C?

A In these sunscreen compositions, only 8 of the 11 contain Castorwax that I can see. And Castorwax is ...

Q And Castorwax is, according to Lesniak, a second wax with a melting point within Lesniak's range, right?

A Castorwax is a second wax within the range, yeah.

Q And as far as you can tell sitting here, the other comparative compositions did not have such a second wax, correct?

A All the compositions are beeswax, and only

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8 and 11 have two waxes. But the sunscreen, these sunscreen compositions, only 8 and 11 have a second wax.

Q And those two were stable, the two with the second wax, correct?

A Yeah, those two compositions were stable. They didn't separate into two phases. All the rest separated into two phases when they did testing, high-temperature testing.

Q When you prepared your declaration, did you think that all of the compositions in this table had all of Lesniak's requirements for ingredients?

A Well, I looked at the differences between the formulations, and there were very slight differences between them, between the unstable and the stable. Very slight differences.

Q But did you not pick up on the Castorwax difference?

MS. JEFFRIES: Objection. Vague and argumentative.

A I can't remember. I may or may not. I noticed that all of them were -- eight or nine of the 11 were unstable, and differences were very slight. It was only a tiny amount of Castorwax.

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Of course the sunscreen compositions, sunscreen lotions probably.

Q These are not sticks?

A There's nothing to say there are sticks. I don't think they are sticks.

Q And Lesniak discloses no instability data on sticks, correct?

A Lesniak doesn't. That doesn't say anything about stability of sticks, much less instability of sticks.

Q Lesniak uses zinc oxide in his compositions, correct?

A Yes, Lesniak uses zinc oxide as a sunscreen active and as a diaper rash active.

Q Zinc oxide is also an antimicrobial, correct?

A Depending on who you talk to, it may or may not be an antimicrobial.

Q Does it have antimicrobial properties?

MS. JEFFRIES: Objection. Vague.

A That is -- antimicrobial, it may have antimicrobial properties against some microbes, yeah, but ... in the context of this patent, it's not an antimicrobial. It's a sunscreen active or a diaper active, as we say. And a POSA would

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understand that.

Q And do you have any evidence that the zinc oxide in Lesniak's compositions lacked antimicrobial properties?

A Well, the patent doesn't tell me anything about the antimicrobial properties of zinc oxide. If you look at the patent, I don't know whether it acts as an antimicrobial here or not or which species of microbe it might be active against.

Q Well, a POSA brings some background knowledge to the patents, right?

A Yes, of course.

Q And a POSA would understand that zinc oxide has antibacterial effects, correct?

MS. JEFFRIES: Objection. Vague.

A In some cases, zinc oxide could be an antimicrobial. In other cases, it may not be an antimicrobial. In this patent, there's nothing to tell the POSA that it's an antimicrobial.

(Deposition Exhibit Number 6 marked for identification.)

Q I'm going to mark as Exhibit 6, it's going to take a minute to upload. Let me know when you've got that. It looks like it's gone through on my end.

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A Which one?
Q Exhibit 6. I don't think you'll have a local, a paper copy.
A Okay. Yes.
Q You've got it?
MS. JEFFRIES: Just give me a second to catch up. It's sort of loading on my end. I don't know what's happening. It looks pretty big.
MR. CALABRO: It's big, so ...
MS. JEFFRIES: It looks like I can open it now. Hang on one more second, sorry. Okay. I have it open now.
Q Okay. Dr. Lochhead, do you recognize Exhibit 6?
A Yes.
Q This is a book you edited, right?
A It is, yes.
Q And what's the title of the book?
A Cosmetic Science and Technology, Theoretical Principles and Applications.
Q What was your role in editing this? What did you do?
A With the other three editors, we gathered contributions. Well, first of all, we decided to write a book, what should be in the book, what

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shouldn't be in the book. Recruited people that could possibly write chapters, and people, sometimes they selected or deselected themselves because they didn't want to write. Then we put the chapters together. And we had -- Elsevier already asked us to do this. So once we put it together, it went to Elsevier to say this is the book. They sent the chapters to us, and each of us edited the appropriate parts.
Q And have you -- you've read this book?
A Oh, yes.
Q And you wrote a foreword to this book, right?
A I think so.
Q It's on page -- let me find it. Page xi or if you type xii into the PDF, it's page 13 of 857. Actually, that's your bio. Let me find your foreword.
A Foreword, yeah. Okay. I'm there.
Q You've got it?
A My foreword?
Q Yeah, your foreword. Or preface, I should say. And it's xvii. Are you there, page 19 of 857 in the PDF?
A I'm there, xvii.

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Q The Second full paragraph says: At this juncture there is a need to review the state-of-the-art to mentor the next generation of cosmetic scientists and to establish a starting point for the forthcoming era of cosmetic science. The purpose of this book is to address that need, constitutes a comprehensive review with contributions from some of the world's leading cosmetic scientists.
Do you see that?
A Yes.
Q Is that accurate characterization of this book?
A Yes, that's why I wrote it. That's what we were trying to do.
Q Okay. And this book was published in 2017, right?
A I think it was 2017, yes. I need to look at the copyright to be sure. In 2016.
Q And turn, please, to page 33 on my screen. It's in Chapter 2, I believe, Section 2.4.3.3.1?
MS. JEFFRIES: So 33 of the PDF or 33 of the --
MR. CALABRO: It's 53 of 857 in the PDF.
A 2.4.3.1?

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Q Have you got it?
A Studies and Emulsification --
Q 2.4.3.3.1?
A 2.4.3.1, it's not coming up. Yes, I've got it.
Q So in Adobe is 34 or 53 of 857?
A It's page 30 of 857. 49 of 857.
Q If you search Deodorant That Works in an Instant, it comes up. Let me know.
A Search?
Q Deodorant That Works in an Instant. Have you got it?
A Who wrote this chapter? I can't remember.
Q You can scroll up, if you want. Let me know when you're ready for ...
A Okay.
Q Ready?
A Now I'll go back to 2.4.3 -- it works --
Q There you go, okay.
A I'm not there yet. Okay.
Q All right. So this section entitled A Deodorant That Works in an Instant, begins: In the 1980s, the main mechanism through which deodorant products intended to combat body odor were the usage of antiperspirants that prevent

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perspiration from the sweat glands. And I'll pause there.

And what does it mean, again, for a deodorant product to combat odors through the usage of antiperspirants?

A The perspiration, what this says it is prevents perspiration from the sweat glands. And what that means is that basically the antiperspirants block the sweat glands, and these are aluminum salts. And as far as we know, they interact with the proteins that are in the sweat and they block sweat glands and stop the sweat from coming out.

Q Okay. And then it also -- the sentence continues to discuss other mechanisms: Antimicrobials that inhibit the activities of residential bacteria from degrading odorless sweat and sebum-derived substances into odorous compounds and masking offensive body odors using citrus and floral fragrances, right? Those are three mechanisms identified here, correct?

A Well, it distinguishes antiperspirants block sweat glands. Antimicrobials -- and so antimicrobials inhibit residual bacteria and odor of sweat, and then you can fragrance it. So

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you're talking about two different types of products. One, an antiperspirant would be the one that blocks the sweat glands and may do other things. A deodorant would not block the sweat glands.

Q Well, the sentence says the main mechanism through which deodorant products intended to combat body odors were, and then it lists the three things we just discussed, right?

A Yeah, it's talking about a broad range of products, include antiperspirants and deodorants.

Q Right.

A I didn't write this.

Q You edited it, though, right?

A I edited it. I rely on the experts on the writing itself, yes.

Q And are you not an expert in deodorants?

A I -- yes, I'm an expert in deodorants.

Q All right. And then the next paragraph talks about a zinc oxide deodorant, right?

A The next sentence?

Q Next paragraph.

A Next paragraph. My thing is not scrolling. Oh. What page are we on? My thing just jumped.

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Q I'm not sure how the pagination works on your PDF, but we're on the same page we were just looking at.

A Let me do the search again. 2.4.

Q A Deodorant That Works in an Instant.

A Oh -- okay. And where are we now?

Q All right. We just looked at the first paragraph in that section. Now we're moving on to the second paragraph. And my question was -- well, why don't you read that paragraph so you know what I'm asking about?

A After pinpointing, yeah?

Q Yeah, that's where we are. Please read that one.

A After pinpointing short chain --

Q You don't have to read it out loud. You can just familiarize yourself with it.

A I've read it.

Q So this is discussing zinc oxide deodorants, correct?

A Yes.

Q And it concludes with: This gave birth to a consumer-friendly formulation with exceptionally high deodorizing capabilities, right?

A Yes.

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Q Now, of the three mechanisms through which deodorant products combat body odors that we looked at in the preceding paragraph, do you know which one the zinc oxide deodorant would be practicing or using?

A No. They propose if it's interacting by stopping the short-chain -- by reacting with the short-chain fatty acids.

Q And what does that mean? What kind of reaction is that?

A Making it zinc salts of fatty acids from the sweat.

Q Is that a fourth type of mechanism, or is it one of the three that we just looked at?

A That's a good question because it could be -- right at this moment, even today, we're not sure where the fatty acids come from that cause odor. And they may be because of bacterial degradation, but they may not.

Q Okay.

A It could be it's just making that zinc salts of the fatty acids.

Q Let's jump to -- it's page 227 of the book itself, of the PDF --

A Can I say something else? Because I know

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that this was something that was presented at IFSCC, which is people presenting their research. As far as I'm aware, this technology was never ever practiced. It had problems, so that's what the author told me later on.

Q Okay. But the book that published with you as an editor said it gave birth to a consumer-friendly formulation with exceptionally high deodorizing capabilities, just to be clear?

A I was the editor, and he was the author. I think he may have been the inventor, but I remember in a subsequent meeting he told me no, it never had been -- it had problems. I don't know what the problems are. Sorry, where did you want me to go?

Q 227 of the book itself. It's --

A I can search 227, can I?

Q 227, see if that works, yeah, that will bring you to the first page, the result.

A Reference 227.

Q Should be above that, I think. At least it's -- well, actually, it's not the first. If you search -- just keep scrolling down until you hit page 227. The page number is in the upper right-hand side. Like the fifth result --

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A It's not -- okay.

Q Fifth result for 227 in my search.

A I don't see page numbers. Where's the page numbers?

Q In the upper right or upper left.

A Okay.

MS. JEFFRIES: And not all the pages have the numbers. Oh, I see they move around. It's so long.

MR. CALABRO: Yeah, there's not a good way to navigate, but we're almost done with this.

A 231, okay. I'm backing up to 227.

Q Let me know when you --

A It just keeps jumping past the numbers. It says I'm in 227 of 246. There's -- I think in zinc oxide and a white powder, is that what you're looking for, 4.3.1.2, zinc oxide?

Q Go to the next page.

A Okay. Yes.

Q 227, okay.

MR. CALABRO: Andrea, let me know when you're --

MS. JEFFRIES: I think I have it. We're talking about 227 of the book, right.

MR. CALABRO: Of the book itself.

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MS. JEFFRIES: Which is -- I think I'll have the right page. We'll see once you ask questions, but I think I have it.

Q All right. First sentence on 227 on my screen is: Zinc oxide is also known to have skin care effects.

Do you see that, Dr. Lochhead?

A Yes, yes.

Q And, for example, zinc oxide is reported to have convergent effects that tighten the skin to make pores less visible, antibacterial effects that kill skin irritation and infection causing, and it lists bacteria, and anti-acne effects.

Do you see that?

A Uh-huh.

Q Is that sentence accurate?

A I'm sorry?

Q Is that sentence accurate?

A Well, I didn't write it. I just edited it. But I presume that will kill staph and pseudomonas. That's what it says.

(Deposition Exhibit Number 7 marked for identification.)

Q I'm going to mark as Exhibit 7, Patent No. EP 0471392.

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MS. JEFFRIES: So hang on one second. We're done with the book for now?

MR. CALABRO: We can set the book aside. Are you good? Anyone need a break?

MS. JEFFRIES: Maybe we should break for lunch in the next 15 or 20 minutes or something.

MR CALABRO: Yeah, I think I can do this one in 15 minutes, and then we'll break.

MS. JEFFRIES: Sure.

MR. CALABRO: If that works.

MS. JEFFRIES: I need to figure out where the heck we are because I was struggling with the book there. I got lost.

MR CALABRO: It's Exhibit 1072 from at least two of the IPRs.

MS. JEFFRIES: 1072. Sorry for the interruption.

MR. CALABRO: You've got your copies, right?

A I'm there.

Q Okay. So you see this is a patent that's assigned to Unilever, right?

A I do.

Q And do you recognize any of the inventors from your time at Unilever?

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A Yes.
Q Did you work with any of them?
A Yes, Andy Park.
Q Did you work with Andy Park on deodorants?
A I may have. I can't remember. I may have.
Q Okay. And then you see in the little abstract at the bottom on the first page, this relates to deodorant composition, right?
A Yes.
Q And it has three ingredients. The first one is an effective amount of a deodorant chosen from salts or oxides of zinc or magnesium, right?
A Yes.
Q And if we scroll down to page 2, on the bottom it says: Disclosure of the Invention, The Deodorant. It says essentially the same thing we just read: The composition according to the invention comprises a deodorant which is chosen from salts or oxides of zinc or magnesium, which are insoluable or only sparingly soluble in water, and then it provides some examples of those deodorants, right?
A Yes.
Q One is, if you jump to -- yeah, no, it's

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on the first page, magnesium hydroxide, line 52. Right?
A I just lost it. Sorry. Yeah, I got it, magnesium hydroxide.
Q And another one is zinc oxide, right? That's the first one?
A Another one is zinc oxide, yes.
Q So magnesium hydroxide and zinc oxide are both disclosed in this Unilever patent as suitable deodorants, right?
A They say you can use these salts as a deodorant, meaning a deodorant active, yes.
Q And then on the next page, first paragraph talks about the amount of deodorant. Are you with me? And it says --
A I can't find it -- yeah, amount of deodorant.
Q Present at --
A 1 to 15 percent composition, yes.
Q So the amount of the deodorant, which could be, for example, magnesium hydroxide or zinc oxide, could go up to 20 percent by weight, right?
A That's what you would add, yes.
Q That's all I have on this one.
A There's something else I'd like to say for this one because I know this one well. In actual fact, what we have here is when you look at the stick, it's an aqueous core polyol stick, and that zinc oxide in the stick would not be zinc oxide in the zinc hydroxide because it would react with the water in the aqueous polyol to form a zinc oxide -- a zinc hydroxide, rather.
Q And would the same be true of magnesium oxide?
A Yes. Magnesium oxide, yes.
Q And yet the suitable deodorants that are listed are magnesium oxide or magnesium hydroxide, right?
A Yes.
Q So we can set that one aside.
A In the formulation, these wouldn't be present as oxides. They would be present as hydroxides in that particular stick formulation because it contains a lot of water.
Q Right. And the patent doesn't teach the POSA that, thought, right? The patent doesn't say that?
A The POSA would understand that, I think.
Q And can you show me where the conversion would take place?

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A Oh, if you look at the stick, look at this so -- sorry, this isn't a stick. This is a roll-on. I apologize, I'm thinking of another --
Q Right. This is --
A This is a roll-on. This isn't a stick at all.
Q Right. So it has zinc oxide as an active, correct?
MS. JEFFRIES: Objection. Mischaracterizes the document and the testimony.
A I think it says that you could chose, a POSA could chose a zinc oxide from this list.
Q Right. But what you said about this being an aqueous stick that would convert the zinc oxide to zinc hydroxide, I just want to be clear, that was not accurate?
A It's not a stick. It's a roll-on.
Q An aqueous stick. But it's not an aqueous stick that converts the zinc oxide to zinc hydroxide, correct?
MS. JEFFRIES: Objection. Compound.
A It's not a stick and it's not an aqueous stick. It's a roll-on.
Q Well, if you look at the field of the invention, it says it's, line 5, very first page

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of the patent, it's suitable for use as a cosmetic stick?
A But it doesn't tell you how to make the stick. It doesn't say how to make the stick, whether a stick -- the roll-on, the only thing they show you are roll-ons. So they didn't -- there's no instructions here how to make a stick.
Q What about example 1, that's a stick?
A Is it? Sorry.
Q Page 4 of the patent.
A Oh. Oh, yeah, it's a stick with a volatile silicon, yeah. And I knew there was something -- I'm sorry. I got this mixed up with another one. I'm not sure what I was thinking. It has a volatile silicon. And 61 percent of volatile silicon, which the major component is volatile silicon, which changes all the characteristics of the stick.
Q Right. But I'm just focused on the zinc oxide. That's not going to be converted to zinc hydroxide?
A The zinc carbonate in here.
Q Right. But you said these sticks were aqueous and would convert the zinc oxide to zinc hydroxide?

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A What I said is in the presence of water, zinc oxide is converted to zinc hydroxide.
Q And there's not water in this formulation, right?
A No.
Q So you were mistaken about that, and that's the last question?
A Yes.
Q All right. Why don't we take a break.
A I'm getting it mixed up with another patent, sorry.
Q Okay.
A The thing here is there's lots of volatile silicon. So that stick is -- again, what I remembered the stick was a different technology, and it's a different technology.
Q Thanks for the clarification.
MR CALABRO: Why don't we break now for lunch, if that works for everyone.
(A lunch break was taken.)
Q Welcome back, Dr. Lochhead.
A Thank you.
Q Did you talk to anyone about your testimony on the break?
A No, had lunch.

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Q Got it. How did you prepare your reports in this case?
A Well, lots of reading and discussion, and then assembled the reports. And I worked with counsel to finalize it, type the report, to get it done.
Q Did you write it up yourself?
A Some of the things had my hand, I was typing. But yeah, all the opinions and all the concept is mine.
Q Who did the first pass?
A They did the legal construct, of course. Sorry?
Q Yeah, I'm sorry. Who did the first draft?
A I did.
Q You wrote up a first draft yourself?
A Well, after lots of discussion, I put bits and pieces together, yeah, and then we worked on it.
Q You were the one who physically typed up the first draft?
A I can't remember because, you know, it came together like a jigsaw puzzle, if you like. I typed a lot of it, yeah.
Q Okay. Let's talk about hardness. The

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only hardness test that's mentioned in the claims of the four P&G patents is ASTM D1321, correct?
MS. JEFFRIES: Objection. Vague.
A It's a modification of D1321.
Q Well, let's talk about the claims themselves. And I can direct you to one, if you need to. Why don't we look at claim 15 of the '915 patent, which we marked as Exhibit 1. And just focusing on the language of claim 15 --
MS. JEFFRIES: Make sure we're there. Bob, do you have that one?
THE WITNESS: I've got it. I've got it.
MS. JEFFRIES: Okay. Great.
Q So it gives the hardness range of 8 to 14 millimeters, as we discussed. And then it says: As measured by penetration with ASTM-D1321 needle.
Do you see that?
A Yes.
Q Okay. So the only test that's expressly mentioned in the claim itself is ASTM D1321?
MS. JEFFRIES: Objection. Mischaracterizes the document.
A The claim has to be read in the context of the patent, as you know. And having read the

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patent, someone would realize that the ASTM D1321 standard was modified, and that's common. It's common for materials to modify a method to measure what you're trying to measure, but you also -- it's also important that you tell people what you've done, and they did that in here. They told people exactly how it was measured.

Q Uh-huh. And if we --

A Again, in the written description, it tells me how to do it.

Q If we set aside the specification for a moment and talk about the length of the claims, can you point me to anywhere in the claims that discloses a hardness test?

MS. JEFFRIES: Objection. Vague. It mischaracterizes the record.

A I don't understand you because I read the claim in the context of the patent.

Q What word in the claim -- what word or words in the claim are you relying on for the hardness test?

A All of them. It tells you the hardness range, the penetration, and what to do to get the penetration. It tells you in a lot of detail in the written description --

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Q No, my -- I'm sorry. My question was about the claim.

So point me to the language, please, in the claim itself that you're relying on for the hardness testing methodology. What words in the claims themselves relate to or disclose that method?

A All of them. You know, and as far as I understand, the claim has to be written in the context of the written description. You can't just take this claim by itself. I look at all the words of that claim, it tells me the range, it tells me the penetration, it tells me the stick, it tells me measure with ASTM-D1321 needle, and I go to the context and it tells me exactly how to do that.

Q And for context, you're referring not to the claim itself, right?

MS. JEFFRIES: Objection.

A I was taking the words of the claim and telling you, use the words of the claim in the context of the patent. Yeah, no, I was using the words of the claim.

Q And you think -- you opine that the Bianchi references require an additional 50-gram

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weight to be used in connection with their tests, right?

A Can I look at where I say that, and can I look at the Bianchi reference, please?

(Deposition Exhibit Number 8 marked for identification.)

MR CALABRO: I'm going to mark Bianchi now. Bianchi '254, which is Exhibit 1008 in the IPR, will be marked as Exhibit 8 in the deposition.

MS. JEFFRIES: Dr. Lochhead asked for what you were referencing when you said he said that. Is there a particular one of his reports that you're referencing?

A Well --

Q Dr. Lochhead, do you have that, or do you want me to point you to something?

A Yes, tell me what report you're referencing.

Q Let's see. The '706 report.

A '706 report? Okay. Yes.

Q So in paragraph -- let's go to paragraph 38. Let me know when you're there.

A Okay.

Q It says in the last sentence: Like

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Bianchi '518, Bianchi '254 --

A I'm not there yet. Where is it? 38?

Q 38.

A Of my report?

Q Of your report for the '706 patent.

A Which -- just 38?

Q 38, last sentence.

A I've got 38, paragraph 122.

Q It's page 17.

A Yes, I'm there.

Q It says like Bianchi '518, Bianchi '254 discloses hardness values for its compositions as measured using the DIN 51579 driven by a total weight of 100 grams, rendering its composition significantly harder than the claimed compositions of the '706 patent.

Are you with me?

A Yes.

Q I marked as Exhibit 8 and dropped in the chat, Bianchi '254 reference. You should have a copy as well. It's Exhibit 1008 in the IPR.

A 100 -- '254, I've got it.

Q And my question is: What in Bianchi '254 are you relying on for the testing methodology that includes a total weight of 100 grams?

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A Well, it says here this stick hardness is measured using a penetrometer Model HPT 7138 from Precision. It comes with a 2.5-gram brass/steel tapered needle, which is DIN 51-579. And we already looked at 51-579 and found it's the same as the ASTM 2139. And it tells you how the sticks are equilibrated.

Then you take it as six different locations, which is a slight deviation from the method, which says measure in only four places, and tells you where to take the measurements. And the depth of needle penetration is recorded to the nearest tenth of a millimeter.

Now, I then go to the DIN method, and the method actually says that you have a 2.5-gram needle and you add another 97.5 grams.

Can I have the method? The method, did I give it to you?

Q The method would be in your exhibits to your report.

A Yes, a method here... okay. On the method I'm looking at EX 2019, page 2, and it tells me in the method there, the weight of the test needle should be 2.5 grams, minus .05 gram, and that's the guide rod should be 97.5 grams plus or minus

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0.1 grams. And it actually says the guide rod adjustable attachable weights of 50 grams, if you want, another 50 grams. So it instructs me there that the method is a guide rod of 97.5 grams, penetration needle of 2.5 grams. So that's 100 grams.

(Deposition Exhibit Number 9 marked for identification.)

Q And now I'm going to mark Bianchi '518, which is Exhibit 1006 in the IPR, I'm going to mark that as Exhibit 9 for the deposition. Let me know when you've got that.

A I've got it.

Q And it's the same question as I was asking for the Bianchi '254 reference. Here I'd like you to direct me to the disclosures that you're relying on for your conclusion that Bianchi '518 hardness testing was done with a 100-gram total.

A Okay. Yeah. This is what I was looking for. Bianchi column 2, it's line 56 and following, it tells you that you use penetration according to ASTM D1321 at 177.5 for -- and what that means to someone who's -- someone who's skilled in doing penetration measurements, we often report them as 100. That's the weight. 77 is the temperature. 5 is for how long you allow the needle to penetrate, so that's 5 seconds. So that would be using ASTM D1321 with a 100-gram weight. But that 77 degrees Celsius for 5 seconds. That tells someone how to do the measurement.

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Q And you don't know for sure whether the ranges disclosed in either of the Bianchi references overlapped with the hardness ranges claimed in P&G's patents, correct?

A I know they can't be correlated because they're two different methods. But what I do know is that if you take the hardness ranges in the Bianchi, the sticks are certainly much harder than the P&G patent sticks.

Q And there's no formulas for converting the results from --

A No, there's no formula.

Q Okay. So -- and you haven't done any testing to see whether the Bianchi and P&G hardness results overlap, right?

A No, I haven't done any testing, but --

Q You can't say --

A -- I relied on the ASTM method.

Q So without any formulas and without any

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testing, you can't say for sure whether those ranges overlap, right?

MS. JEFFRIES: Objection. Asked and answered and vague. Go ahead, Bob -- Dr. Lochhead, you can answer, if you can.

A I can look at the results and I see the hardness testing, and that's what I looked at.

Q Well, I mean, you agree Bianchi discloses a hardness range of 7 to 14 and that -- those numbers appeared in some of P&G's claims, right?

A Yeah, it was a different method.

Q Different method.

A 70/14 with a 50-gram needle versus 70/14 with a 100-gram needle. 70/14 with a 100-gram needle would be a much harder stick. If you look at the results, which I can't find at the moment, you'll see that the ones measured in the Bianchi references are all -- they're right on the cusp, which tells me you're using a heavier stick and you still haven't penetrated all the way you expect to.

Q So my question is --

A I can deduce that they're harder sticks.

Q Fair enough.

My question is: Given the two ranges, 7

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to 14 using whatever you believe Bianchi to have used and 7 to 14 using whatever you believe P&G to have used, you don't know for sure whether those ranges overlap?

MS. JEFFRIES: Objection. Asked and answered and also vague. Mischaracterizing the record.

A I do know that if you measure with a 100-gram stick, the way Bianchi does, that if you get the same material, it will penetrate much further. I do know that the Bianchi reference shows me much harder sticks. And if I look -- if I look at where the measurements are, the 100-gram penetrometer would drive it much further.

Q And do you know whether the --

A I can't give you the exact method, but I do know I can deduce the Bianchi sticks are harder sticks.

Q Do you know whether the ranges overlap, the 7 to 14 ranges?

MS. JEFFRIES: Objection. Asked and answered. Mischaracterizing the documents.

A There's two different methods, and I don't know what the correlation is between those methods. But I do know that the 50-gram needle

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wouldn't penetrate nearly as far as the 100-gram needle. In the patent, of course, the 100-gram needle goes almost the same height. So the 100-gram needle would be expected to go much further if it was the Procter & Gamble sticks.

Q Did you ask Procter & Gamble for any results from hardness testing it had done?

A No.

Q Did you speak with any of the inventors about how they performed the testing in their patents?

A No.

Q And there's no conversion you know of to convert between the Bianchi and P&G tests as you see them, correct?

A No.

Q Okay. Before P&G's patents were filed, had you personally conducted any hardness tests?

A Yes, a long time ago.

Q When was that?

A Oh, I can't remember for sure. I can remember peering at the needle quite a while ago. Looking at a stick, the hardness method. This hardness method is used for waxes, greases, all sorts of things. I can remember looking at it.

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Q By this hardness method, were you using the D1321 method?

A I was using the penetrometer method. I can't say for sure it was D1321.

Q And what were you remembering?

A I can't remember. As I told you, I can remember looking at the needle. I've done it on occasion. I haven't done it routinely, but I've done it occasionally.

Q Have you done it on cosmetic sticks?

A Yes.

Q Okay. And so back when you were testing this, hardness had been recognized as a property that was important for cosmetic sticks?

MS. JEFFRIES: Objection. Vague.

A Hardness and softness, yes.

Q And someone skilled in the art like you would have the desire to optimize the hardness, right?

A I don't know --

MS. JEFFRIES: Objection. Broad. Vague. Incomplete hypothetical.

A Somebody like me would be trying to formulate something that was acceptable and trying to figure out how to measure that, how it was

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acceptable.

Q And you had certain tools like a penetrometer that would help you accomplish that, right?

A I don't have the penetrometer in my lab.

Q No, I'm talking at the time when you were doing this testing, you had certain tools at your disposal like a penetrometer that you could use to test the hardness and adjust it, right?

A I used someone else's penetrometer.

Q Fair enough. But there were tools in existence that someone skilled in the art such as yourself could adjust and test the hardness, right?

MS. JEFFRIES: Objection. Incomplete hypothetical.

A They could measure. The tools are used to measure the hardness. The formulator has to adjust the hardness.

Q Right. And a formulator like yourself would have -- do you consider yourself a formulator?

A I'm somebody who stands behind -- I've formulated before, but that's not my primary function. My primary function is to be able to

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explain the science and the technologies to the formulators and guide them.
Q Okay. Let's use the term "POSA." You consider yourself a POSA, right, for these patents?
A I think I'm more than a POSA. I think I understand what a POSA would do. I've worked with enough POSAs.
Q So anyway, a POSA would have certain know-how on how to adjust the hardness once it had been tested to develop an acceptable cosmetic stick?
MS. JEFFRIES: Objection. Incomplete hypothetical.
A Yeah, that's a very -- a very open question you've asked me. Some individual had to adjust the hardness. I don't know what they're adjusting the hardness of.
Q Sure. Well, maybe we can narrow it to your testing. This is back before P&G patents. You tested a stick for hardness, right?
A Yes.
Q With a penetrometer, right?
A Yes, yes.
Q What did you do with those results?

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A I used them in combination with other results to guide formulators towards something that they wanted to make.
Q Okay. Was there a hardness target for these -- that these formulators gave you or you gave to the formulators?
MS. JEFFRIES: Objection. Vague. Irrelevant.
Q Sorry. I missed the answer.
A I can't remember if there was a hardness target. I just know we were measuring hardness.
Q Was there a hardness acceptability criteria?
MS. JEFFRIES: Same objections.
A I can't remember if there was a hardness acceptability.
Q Was there a reason you tested hardness?
A It was one of a variety of rheology tests trying to understand what the composition would do.
Q Do you know how the formulators used the hardness results that you gave them?
A Part of the test, part of a routine number of tests. Clear they were measuring -- they were measuring the hardness of a stick because they

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didn't want it too hard or too soft.
Q And if the stick came back as too hard or too soft, would the formulators have been able to do anything about that?
MS. JEFFRIES: Objection. Incomplete hypothetical.
A Well, remember, it's part of a variety of tests. So all of these tests are helping to guide the formulator to make a product, in this case, to make a better product.
Q Have you ever had a penetrometer in your own lab?
A No.
Q How many times approximately have you measured hardness with a penetrometer?
A I don't know. Over 50-something years, I don't know. Somewhere between 20 and a hundred times, I guess.
MS. JEFFRIES: Dr. Lochhead, I'll remind you not to guess. I don't think counsel is interested in your guesses. If you have an estimate, that's great. But if you don't, you don't need to guess. And you shouldn't.
A I was guessing.
Q You can give me your guess. I'm entitled

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to your --
MR. CALABRO: Stop coaching the witness, Andrea.
MS. JEFFRIES: You're entitled to an estimate, but you're not entitled to a wild guess. So I don't think this matters. It doesn't matter to me, but I'm just reminding the witness not to be guessing.
MR. CALABRO: Oh, no, it matters.
Q Dr. Lochhead, for this case, you didn't do any testing to confirm whether for a given stick, it could fall both within the Bianchi range as you interpret it and the P&G range as you interpret it, correct?
MS. JEFFRIES: Objection. Compound. Asked and answered.
Q Answer it again, please, Dr. Lochhead.
A I didn't conduct any penetrometer tests in this case.
Q Before P&G's patents were filed, were you generally aware if you add an ingredient like beeswax to a deodorant stick, using more beeswax would make the stick harder and using less beeswax would make the stick softer?
MS. JEFFRIES: Objection. Incomplete

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hypothetical.
A No, I was not. As I explained before, it depends on the detail of the crystal structure and how it's flocculated.
Q So you didn't know that?
A No, that's something you learn from the methods. If I followed the methods that I knew of, then I could get -- I could reproduce the stick. But in the abstract, could I predict? No, I probably couldn't predict.
MS. JEFFRIES: Dr. Lochhead, I think you do need to speak up a little bit louder. I'm not hearing you. I'm not sure if the court reporter can hear you.
THE WITNESS: Okay.
MS. JEFFRIES: And if you're getting a little bit -- if you want to take a break, get water, that's also fine.
THE WITNESS: In a few minutes, I'll need to go to the bathroom.
MS. JEFFRIES: We can take a break in a few minutes, that's no problem.
MR. CALABRO: Why don't we take a quick break now.
MS. JEFFRIES: Okay.

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(A short break was taken.)
Q Dr. Lochhead, when were you first engaged by P&G in connection with these patents?
A I can't remember for sure, but I think it was about 6 months ago.
Q And what were you engaged for? What was the scope of the engagement?
A Again, I'd like to -- it's just not here. I can't remember whether I was engaged to be a consult at the time or just an expert. But I was engaged to review and comment on the patent.
Q And was it just in connection with these IPRs?
A Yes.
MR. CALABRO: That's all I have for right now. No further questions.
THE WITNESS: Okay.
MS. JEFFRIES: Okay.
(Discussion between the court reporter and counsel regarding transcript orders.)
MS. JEFFRIES: So we'll do expedited. I don't want to burden you. But tomorrow or the next day. If you're doing expedited for the other side, the same timing is fine for us. If you're not, we'll just take it in, let's say, 2 days.

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MR. CALABRO: Yeah, we'll do the same, I think, 2 days. I don't remember what I put down but ...
THE COURT REPORTER: I can't remember either. But 2 days will be Monday, if that's acceptable with both of you.
MS. JEFFRIES: That's okay for me.
MR. CALABRO: That works for me.
(Witness excused, 2:21 p.m. Eastern.)

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ACKNOWLEDGMENT OF DEPONENT

I, DR. ROBERT LOCHHEAD, do hereby acknowledge that I have read and examined the foregoing testimony and the same is a true, correct, and complete transcription of the testimony given by me and any corrections appear on the attached errata sheet signed by me.

_____
(SIGNATURE) (DATE)

CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

I, RACHEL F. GARD, Certified Reporter and Notary Public within and for the States of Illinois, Michigan, Indiana, and Nevada, do hereby certify:

That DR. ROBERT LOCHHEAD, the witness whose deposition is hereinbefore set forth, was duly sworn by me before the commencement of such deposition and that such deposition was taken before me and is a true record of the testimony given by such witness.

I further certify that the adverse party, PROCTER & GAMBLE COMPANY, was represented by counsel at the deposition.

I further certify that the deposition of DR. ROBERT LOCHHEAD occurred remotely via Zoom, on Wednesday, July 10, 2025, commencing at 9:32 a.m. to 2:21 p.m.

I further certify that I am not related to any of the parties to this action by blood or marriage, I am not employed by or an attorney to any of the parties to this action, and that I am in no way interested, financially or otherwise, in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 14th day of July, 2025.

Rachel F Gard

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