UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AXION BIOSYSTEMS, INC.,

Petitioner,

vs.

AGILENT TECHNOLOGIES, INC.,

Patent Owner.

Case No. IPR2024-01467

Patent 11,906,508

The deposition of BENJAMIN SANCHEZ TERRONES, Ph.D, taken before Sharon A. Jerndt, Certified Shorthand Reporter and Registered Professional Reporter, at 180 North LaSalle Street, Suite 2800, Chicago, Illinois, commencing at 10:00 a.m. on the 8th day of August, 2025.

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(Witness sworn.)

WHEREUPON:

BENJAMIN SANCHEZ TERRONES, Ph.D.,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. NIGHTINGALE:

Q. Okay. Good morning. Can you hear me okay, Dr. Sanchez?

A. Yes, I do.

Q. Can you please state your name for the record?

A. Benjamin Sanchez Terrones.

Q. Is it okay if I address you as Dr. Sanchez today, I understand that's your preference?

A. Yes, that's okay. Thank you.

Q. Dr. Sanchez, have you had your deposition taken before?

A. Say that again.

Q. Have you had your deposition taken before?

A. Yes.

Q. How many times have you been deposed?

A. No. This is my first time. Sorry.

Q. Okay. So my question, have you had your deposition taken before, to confirm, the answer is no?

A. No, correct.

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Q. So I am going to be asking you a series of questions today. Because we are doing this deposition remotely it is important that we don't talk over each other so that the court reporter can accurately record your testimony. So I would ask you to please let me finish my question before you begin answering, and I'll try to do the same. I'll try to wait until you are done with your answer before I ask another question.

Does that sound fair?

A. Correct.

Q. Dr. Sanchez, have you ever testified at a trial or an arbitration proceeding?

A. No.

Q. Prior to these IPR matters have you ever submitted an expert declaration in a PTAB matter?

A. No.

Q. Is this the first patent litigation that you have worked on?

A. Yes.

Q. You understand that the testimony you are providing today is under oath; is that correct?

A. Yes.

Q. Dr. Sanchez, do you agree to not discuss the substance of your testimony with counsel during any breaks today?

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A. Yes.

Q. Is there anything that would prevent you from giving truthful and accurate testimony today?

A. No.

Q. Today we will be discussing the IPR proceeding for U.S. Patent No. 11,906508. Is it okay if we refer to this as the 508 patent?

A. Yes.

Q. I have uploaded a document with the file name '508 Patent dot PDF. This document bears the label Axion Exhibit 1001.

Dr. Sanchez, can you please download this file?

MR. WANG: Do you have a hard copy?

THE WITNESS: I am not sure if I do.

BY MR. NIGHTINGALE:

Q. Dr. Sanchez, do you have a copy of the '508 Patent in front of you.

A. One second.

MR. BABCOCK: So this is Brent Babcock, representing the patent owner. In the chat in the Zoom Josh uploaded the exhibit; do you see that?

THE WITNESS: Can I use my laptop and connect and load it? Maybe it is faster.

MR. BABCOCK: I am okay with that. Josh, are you?

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MR. NIGHTINGALE: Yes, feel free to use the laptop.

MR. BABCOCK: So if you click on the chat and then go to the right, you will see where Josh will have some other documents that he will want to show him.

(Discussion off the record.)

BY MR. NIGHTINGALE:

Q. So Dr. Sanchez, you have the '508 Patent in front of you; is that correct?

A. Correct.

Q. This document bears the label Axion Exhibit 1001; is that correct?

A. 1,001 you said?

Q. That's correct.

A. 1,001. Where do I find that number?

Q. If you are looking at the copy of --

A. The file name that you send? Yes, that's correct, it has 1,000 --

Q. Okay. I just want to make sure we are all looking at the same document.

A. Yes, yes.

Q. The document I uploaded has a file name '508 Patent on PDF, Axion Exhibit 1001.

A. Yes, yes. It is on the bottom right corner, yes.

Q. Dr. Sanchez, who retained you in this

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litigation?

A. First it was Lois, and then Sterlington.

Q. Prior to being retained did you know anyone from Agilent?

A. No.

Q. Prior to being retained did you ever do any business with Agilent?

A. No.

Q. So outside of this litigation you have not been a consultant for Agilent?

A. No.

Q. Dr. Sanchez, you are being compensated at the rate of 500 dollars per hour; is that correct?

A. Yes.

Q. And you are being paid that hourly rate for all work performed in connection with this matter?

A. Yes.

Q. And that would include today's testimony, correct?

A. Yes.

Q. About how many hours have you billed to this IPR so far?

A. One second. I think about 13, somewhere in between 13 and 15 hours.

Q. What did you do to prepare for your deposition

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today?

A. My deposition today?

Q. What did you do to prepare for this deposition?

A. I read the materials that I was provided to, which is my declaration and Dr. -- well, I don't know if he is a doctor -- Jones patent, and Agilent's patent and Xu's patent.

Q. So you said the declaration, the Jones patent, the '508 Patent. Did you say anything else, Dr. Sanchez?

A. I said Xu, Xu's patent. X-U.

Q. Xu 752. So those four documents, you read your declaration, Jones, the '508 Patent and Xu's 752?

A. And Dr. King's declaration as well.

Q. Okay. Thank you. So just those five documents, that's what you did to prepare for your deposition today, you reviewed those?

A. Correct.

Q. Did you have any discussions with others to prepare for your deposition?

A. Can you define others?

Q. Counsel --

A. Yes.

Q. -- for Agilent? So you had a meeting with

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counsel for Agilent to prepare for this deposition?

A. Correct.

Q. Who was at that meeting?

A. It was Yang, Brent, and three people from Agilent; Jas, Daniel, you will have to forgive me, I don't remember the third person.

Q. I'm sorry, can you please spell or repeat the names of the folks from Agilent --

A. Yes.

Q. -- that were --

A. Yes, Jasbir, Daniel, I think it was Daniel Hart, and the third person I don't recall his name.

Q. Are all of the individuals that you met with to prepare, are they all lawyers?

A. I don't know.

Q. Was this meeting in person or over the phone?

A. Over Zoom, but actually Teams is what we use.

Q. When was that meeting?

A. Yesterday.

Q. And you just met one time to prepare for your deposition?

A. Correct.

Q. About how long did you meet for?

A. Four hours and a half, including lunch time.

Q. So to your knowledge do you know if any of the

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folks in the meeting were not lawyers?

A. I didn't ask for their jobs.

Q. I have uploaded a document with the file name Declaration of Benjamin Sanchez Terrones PhD dot PDF. This document bears the label Agilent Exhibit 2009.

Dr. Sanchez, do you have a copy of your declaration?

A. I do.

Q. And this is -- you're looking at the document labeled Exhibit 2009; is that correct?

A. Yes.

Q. Do you recognize Exhibit 2009 as the declaration you have submitted --

A. Yes.

Q. -- in this matter? Can you please look at page 38 of your declaration. Page 38.

A. Yes.

Q. Is that your signature on page 38?

A. Yes.

Q. How much time did you spend preparing this declaration?

A. So ten hours or so.

Q. And you intended to be truthful and honest in providing the opinions in this declaration; is that correct?

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A. Yes.

Q. Please turn to paragraph 54 of your declaration on page 29.

A. Okay.

Q. The last sentence of that paragraph states: The combination of Xu's 752 and Jones would not make claims in the '508 Patent obvious.

Do you see that?

A. Yes.

Q. Does your declaration include a section detailing your understanding of the law of obviousness?

A. Yes.

Q. Can you direct me to that section?

A. I don't recall where it is. I can't find it.

Q. Sorry, can you repeat that?

A. I cannot find it.

Q. So does your declaration in fact include a section detailing your understanding of the law of obviousness?

A. As I said, I cannot find it in my declaration.

Q. Is the answer no?

A. My answer was that I cannot find it on my declaration.

Q. Okay. This is your declaration, and I am asking you, does it include a section detailing your

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understanding of the law of obviousness?

A. As I said, I cannot if find it, and therefore, no.

Q. Was this omission intentional?

A. Not that I am aware of.

Q. What do you mean, not that you are aware of?

A. It was never discussed.

Q. Dr. Sanchez, do you believe it is important for an expert witness to articulate the legal standard they are applying when offering an opinion on obviousness?

A. Can you repeat the question again? Sorry.

Q. Do you believe it is important for an expert witness to articulate the legal standard they are applying when offering an opinion on obviousness?

A. Yes.

Q. But you didn't articulate the legal standard that you applied?

A. It is not in my declaration.

Q. So you believe it is important, but you didn't do it?

A. I didn't say that. I said it is not in my declaration. I did apply the legal standard as explained to me what obviousness means when discussing this case, but it is not included as part of the

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declaration.

Q. Without stating a legal standard in your declaration how can the board or the parties be certain that you applied the correct standard in reaching your conclusion in paragraph 54?

A. Because I was explained what the concept of obviousness referred and means from a legal standard.

Q. So for the record can you explain your understanding of the legal standard of obviousness?

A. Yes. It means that combining two different patents renders -- allows you to by obviousness develop, implement the idea, the concept that is included in another patent, and therefore, renders that other patent invalid because it was obvious to combine these two things together to achieve that.

Q. Is that your complete understanding of the law of obviousness?

A. Yes.

Q. Dr. Sanchez, did you analyze whether there would have been a motivation combined the teachings of Xu 752 and Jones?

A. In what sense analyze?

Q. In the general sense did you consider whether there would have been motivation to combine Xu 752 and Jones?

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A. I did when I was studying both.

Q. I'm sorry?

A. I did when I was studying both.

Q. But your declaration, does it express an opinion on whether there would have an motivation combined in these references?

A. No, because my declaration is in relation to the claims supported by Agilent which is 1 through 15.

Q. To confirm, does your declaration express any opinions on whether there would have been a motivation to combine Xu 715 and Jones?

A. Give me one second. Yes. Paragraph 54, when I say the combination of the two, Xu and Jones, would not make claims of Exhibit 508 obvious.

Q. Did you analyze, Dr. Sanchez, whether there would have been a -- excuse me -- whether a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teaching of the Xu 752 and Jones?

A. Can you repeat the question?

Q. Did you analyze whether a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of Xu 752 and Jones?

A. Yes.

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Q. Did you express any opinions on whether those would have had a reasonable expectation of success in combining these references in your declaration?

A. In paragraph number 52 I do mention that a person of ordinary skill in the art wouldn't have been able to improve, not improve, actually measure faster the impedance based on what Jones teaches.

Q. I can repeat my question. Does your declaration express any opinions on whether a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of Xu 752 and Jones?

A. Yes, paragraph 52. What I said Jones nowhere teaches or even suggests that its system could operate faster. And therefore, a person of ordinary skill in the art wouldn't have been able to successfully achieve millisecond time resolution.

Q. Dr. Sanchez, is your conclusion of nonobviousness based exclusively on your technical analysis or did you also apply the legal analysis?

A. Can you explain what a legal analysis means?

Q. In the general sense of the words I am asking you, did you conclude nonobviousness only based on the technical analysis, or did you also apply a legal analysis?

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A. If you cannot explain to me what a legal analysis means in a specific sense, I am not sure I can answer your question because I didn't understand the question.

Q. Did you apply your understanding of the law of obviousness in rendering your conclusion of nonobviousness?

A. Yes.

Q. Please describe your application of the law of obviousness to answer this question of whether the claims would have been obvious.

A. Yes. As I said, combining what Jones teaches in addition with Xu would have rendered the Exhibit 109 -- is that the exhibit number? No -- 508 invalid because of obviousness.

Q. Dr. Sanchez, can you now turn to paragraph 15 of your declaration that begins on page 8.

A. Okay.

Q. Is it correct that the documents listed in paragraph 15 and any other materials referenced in the declaration are the only materials you reviewed in connection with preparing your declaration?

A. The documents that I reviewed in preparing my declaration are the ones that I stated before, those materials that I list; the file history between Axion

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and Agilent in relation to the two patents, and then -- sorry -- Jones and Xu and Agilent. As well as Dr. Kim's declaration.

Q. So to be clear, you have only reviewed the documents that are listed in paragraph 15 of your declaration in preparing this declaration; is that correct?

A. In preparing my declaration, Bruce Kim, yeah, his curriculum as well. The 508, yes, the patent, correct, Xu's patent, Jones' patent. And the Board's decision, sorry, I read that too. And then I read, but not in the same level of depth, this addition of patents; Finnerty, Lee, Sharma, Franco, Engblom and Franz. Yes, that is correct.

Q. So you didn't review any other documents except for these documents listed in paragraph 15 in preparing your declaration?

A. Correct.

Q. At the end of paragraph 15, Dr. Sanchez, you say: The above referenced materials are in addition to any other materials referenced directly or indirectly in this declaration.

Do you see that?

A. Yes.

Q. Did you reference any materials indirectly in

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your declaration?

A. Not that I recall.

Q. Do you want to take a look?

A. It is a lengthy process, and I am afraid that I may skip or miss any reference as I sit here. It would take me a while --

MR. NIGHTINGALE: I'm sorry, I didn't mean to interrupt you.

BY MR. NIGHTINGALE:

Q. Just to be clear, Dr. Sanchez, I'm just trying to understand what you did consider in preparing this declaration, and that's why I would just -- I want to know whether there are materials that are not referenced directly or maybe indirectly referenced.

A. Again, rendered in this declaration. I don't remember if there is any reference throughout my declaration to these materials that may or may not have been provided to me directly in relation to my declaration, but these documents A through Q are the ones that I reviewed.

Q. In preparing your declaration did you conduct any independent search for additional documents that might be relevant to the issues in this proceeding?

A. No.

Q. So in preparing your declaration you relied

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solely on materials that were provided to you by counsel; is that correct?

A. Counsel, yes.

Q. So is it accurate to say that your review of the record and the sources you considered was confined to what was supplied by counsel without an independent effort to identify potentially contrary or inconsistent references?

A. These are the documents that I reviewed provided by counsel, and then based on my scientific expertise there were aspects in relation to this litigation that were directly connected to my knowledge throughout my PhD. I didn't have to look for my PhD because I wrote it.

Q. Dr. Sanchez, with respect to Exhibits 2014, 2015, 2016, 2017, 2018, and 2019, did you personally identify in selecting these documents as relevant to your analysis or were they also provided by counsel?

A. They were provided by counsel.

Q. I have uploaded a document with a file name Benjamin Sanchez Terrones CV as a PDF. This document bears the label Exhibit 2010.

Dr. Sanchez, if you don't already have a copy of your CV, Exhibit 2010, can you please download this file?

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A. I have it in front of me.

Q. Do you recognize Exhibit 2010 as being your CV that was submitted in this matter?

A. Yes.

Q. Has your CV been updated since you submitted it in this case?

A. Let me see. Yes, it has been updated.

Q. Can you provide us with a copy of your most recent CV for the record?

A. Now?

Q. Today would be fine. It doesn't have to be right this second, but we would like an updated copy. We can get that through Agilent's counsel.

Would you be willing to do that?

A. Yes, no problem. One second, I am writing a note. It is just a new grant that I got that is not listed.

Q. Dr. Sanchez, does your CV, Exhibit 2010, contain a comprehensive list of your journal publications as of the date it was submitted?

A. Yes.

Q. To the best of your knowledge is the list of journal publications in your CV accurate and complete as of the time you submitted it --

A. Yes.

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Q. -- in this case? The journal publications are listed in your CV in reverse chronological order starting with the latest ones; is that correct?

A. Yes.

Q. If you look at the last entry under the journal publication section of your CV, can you identify the year of that publication, for the record?

A. 2011.

Q. So to confirm your first journal publication was published in 2011; is that correct?

A. Correct.

Q. Can you please describe the course of study that you pursued in obtaining your bachelor of science degree in telecommunication engineering?

A. Yes. So I was an undergrad student from 2001 to 2005 in telecommunication engineering.

Q. So can you describe generally what you studied in obtaining your bachelor's degree in telecommunication engineering?

A. Yes, I obtained my degree in telecommunication engineering in Spain which at that time was one of the more difficult college degrees to get access in because of the difficulty in telecommunication. I don't think there is an equivalent here in the United States. We call it electrical and computer engineering, but

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telecommunication engineering is in Spain, back in the time, was focused on signal processing, instrumentation, radar. Did I say signal processing? What else. And you know, it was a degree focused on telecommunications. That was, I can be more specific in the courses, if you want me to, but...

Q. I think that's fine. Let me ask you. During the course of obtaining your telecommunication engineering degree did your coursework or research projects involve any topics related to biomedical engineering or biological sciences?

A. It did when I also studied my other undergrad degree on electronic engineering.

Q. We will get there. So let's just talk about the telecommunication engineering degree. In obtaining your degree in telecommunication engineering did your coursework or research projects involve topics relating to biomedical engineering or biological sciences?

A. That was 20 years ago. It will be difficult for me to provide you with an honest and correct answer to that question, because it was 20 years ago and I don't recall all project assignments from the top of my head. But it was common throughout my years of a student to have different types of related projects that covered a broad span of application so it wouldn't be,

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you know, unusual to have had the opportunity doing one of the projects to participate in some research activity or work undergrad that was related to a biomedical application. It would have been very plausible.

Q. So turning to your bachelor of science degree in electrical engineering, can you describe the main areas of study and the types of courses that you took during this program?

A. Yes. So the courses that I took were more focused on electronic concepts spanning from electronic devices to digital design, and then analog circuit design which is what got me into my PhD because all the analog circuitry design that I learned was related to biomedical applications.

Q. So specifically in obtaining your bachelor's degree in electrical engineering did you study symptoms and methods for bioanalysis of cells?

A. I think we did learn how to, yes, how to measure the electrical appearance of cells as part of a course called sensors and signal conditioning that was taught by my PhD advisor, who wasn't at that time, but yes.

Q. Dr. Sanchez, you obtained a master's degree in electrical engineering?

A. Correct.

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Q. Did you write a thesis --

A. Sorry. It is electronic engineering, not electrical engineering.

Q. Your CV says MS in electrical engineering.

A. Apologies.

Q. So you obtained a master's degree in electronic engineering; is that correct?

A. Yes.

Q. Did you write a thesis as part of earning your master's degree in electronic engineering?

A. Yes.

Q. Do you recall the title of your master's thesis?

A. Oh, boy. One second. I think it was something along the lines of Platform for Remote Laboratories, but I don't recall word by word the title of my master's thesis.

Q. Would you be able to take a look at your records during the break and provide that information after we come back from a break?

A. I can try. You want me to look at the title of my master's thesis?

Q. I am asking you for the title of your master's thesis. Would you also be willing to give us a copy of it?

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A. I don't know if that's available.

Q. Okay. Can you take a look?

A. I can try, yes. I mean, right, there was a hard copy printed in a library in Spain, you know. I don't know at that time there were electronic records, you know, and I haven't storage -- I haven't stored every single document that I have produced since 2000, but I can try. Title of the thesis, or master's thesis. Okay.

Q. Dr. Sanchez, you also obtained a PhD in elec -- well --

A. Electronic.

Q. PhD in electrical engineering or electronic engineering?

A. Electronic. For easy, when I explain my degrees here in the United States because there is no one-to-one equivalency, I use electrical instead of electronic because people relate to it and understand it easier and they ask less questions.

Q. Okay. So you have obtained a PhD in electronic engineering?

A. Correct.

Q. Did you write a thesis as part of earning your PhD in electronic engineering?

A. It is a requirement.

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Q. Do you recall the general time frame over which you developed the work that you presented in your PhD thesis?

A. Do you mean from the beginning until I defend it?

Q. Yeah. Well, if that's when you did the work for the thesis.

A. The work is spanned across multiple years. I am just asking what do you understand as when I developed the work? If it is just a specific to one point in time, or you are asking, again, from the beginning till the end?

Q. Well, I am assuming the work that you did in 2008 was relevant to the final thesis that was accepted in 2012; is that correct?

A. No, that's actually not. I mean as part of a PhD usually the first year you spend educating yourself and learning the concept. And in point in fact, you know, when I started my PhD, my PhD advisor didn't have received yet the funds to conduct a specific investigation which later my PhD focused on.

So the first year of my PhD wasn't already defined working on the topic of my PhD. It was more education and discovery, literature search, educating myself on topics related to research at the same time

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that I was doing the required coursework as a PhD student.

Q. So is it fair to say roughly between the years 2009 and 2012, that was the time frame where you did work that eventually made it into your PhD thesis?

A. I would say more 2010 to 2012.

Q. Let's turn back to your declaration, Exhibit 2009. And can you please turn to paragraph 16 which starts on page 9.

A. Sorry, you said paragraph 16?

Q. Yes. Paragraph 16, starts on page 9.

A. Yes.

Q. In paragraph 16 you state: The discussions in this declaration are intended to convey the state of the art and the knowledge of a POSA generally prior to the earliest effective filing date of the patent application that issued as the respective '508 Patent which I understand is May 5, 2008, based on the filing date of the provisional application to which the '508 Patent claims priority. Do you see that?

A. Yes.

Q. Can you confirm your academic status as of May 2008?

A. May 2008, that would have been an under grad. No, sorry. Sorry, let me check when did I get my

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masters, in 2008, and that was in the summer, so that would have been July and this is May. So I was still an undergrad. I hadn't completed my master's.

Q. So as of May 2008 you had not completed your master's degree --

A. No. Typically --

Q. -- is that correct?

A. Correct. Typically courses end later than in the U.S., June being, June 20 is usually final exams week.

Q. And as of May 2008 you hadn't completed your PhD coursework, correct?

A. No, of course. Yeah, no.

Q. You had earned two bachelor degrees by May 2008; is that correct?

A. Yes. Yes, I think so. Yes.

Q. Had you published any peer-review articles as of May of 2008?

A. Peer-review articles. No, my first article, journal article, was in 2011, I think.

Q. Have you presented at any conferences as of May of 2008?

A. Maybe we submitted a conference proceeding, but I wasn't -- I did not present. Wait one second. did I present? I don't know if I presented or was it my

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PhD advisor.

It is very common that early on due to the, you know, nature and still having to learn how to present scientific research work to the scientific community that, especially in the first years, that the work done by the student is presented by the advisor. So I could have been author of a conference proceeding, but I don't recall me being the one presenting.

So, to answer your question, I think -- can you repeat the question?

Q. Have you presented at any conferences as of May of 2008?

A. And by presented you mean, what do you mean?

Q. Presented. Like the word presented means.

A. Presented is a verb and can be an oral presentation. It can be presenting as a showing of piece of paper. If you are referring if I presented orally in front of a scientific audience conference proceeding to where I am a first author or an author, I don't recall that being the case. Could have been presented, my PhD advisor.

Q. Have you contributed to any patent as of May of 2008?

A. One second. As of 2008. I don't recall participating in any patent.

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Q. Would you agree that as of May of 2008 your experience was primarily that of a graduate student rather than an established professional in the field?

A. Say that again, the question.

Q. Would you agree that as of May 2008 your expertise was primarily that of a graduate student rather than an established professional in the field?

A. Yes.

Q. When you state that you are intending to convey the state of the art and the knowledge of a POSA generally prior to the earliest effective filing date of the patent application and issued as the respected '508 Patent, are you basing this exclusively on your knowledge and expertise as a graduate student in 2008?

A. No. In my current knowledge.

Q. So when you state that you are intending to convey the state of the art and the knowledge of a POSA generally prior to the earliest effective filing date of the patent application and issued as the respective '508 Patent, you are basing this in part on knowledge and experience that you gained after May 2008; is that correct?

A. Correct.

Q. Dr. Sanchez, we have been going for about an hour. Do you need to take a break or would you like to

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continue?

A. I am okay. Thank you for asking.

Q. When were you first contacted regarding your potential involvement in this case?

A. Last year.

Q. Can you give me a more precise time during last year?

A. Sorry. I have two kids and a busy life. I don't remember from the top of my head when I was first contacted. Could have been in the fall last year. I think that was about the time frame that I was first approached by Lois, yes.

Q. So possibly fall 2024; is that about right?

A. Yes.

Q. Would you be willing to check your records during a break and get back to me about when exactly you were contacted first about this matter?

A. Yes. One second. You are giving me a lot of homework.

Q. Who was it that first contacted you as serving as an expert in this case?

A. Brent.

Q. On what day did you formally agree to serve as an expert for Agilent?

A. Oh, on what date. I don't know. I don't

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remember.

Q. Could you take a look for that during the break also?

A. Date that I formally agreed? Say that again. The date that I formally agreed to serving as what?

Q. To serve as an expert for Agilent in this case.

A. Okay.

Q. Prior to being retained in this matter had you had any communications with Agilent or its counsel regarding the subject matter of this IPR or the patents at issue?

A. No.

Q. Dr. Sanchez, did you personally write the declaration that has been submitted in this proceeding?

A. Personally write, no.

Q. Can you describe the process that you used -- or excuse me -- can you describe the process by your which your declaration was drafted?

A. Yes, as part of those 10 to 15 hours that I was referring before of my work done as an expert in this case, we had multiple meetings to discuss my expert opinion on the interpretation of claims 1 through 15 that is part of my declaration. And then after me conveying my expert opinion to counsel they were first

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drafted, my declaration, the content of my declaration to which I reviewed for correctness multiple times until I was -- until I approved and I accepted the written statements that were conveying my thoughts on this case. And that involved multiple meetings, discussions, to write those.

Q. So you had multiple meetings and there were -- you exchanged drafts with counsel; is that correct?

A. I don't recall sharing drafts with counsel.

Q. Eventually counsel provided you with a draft and you agreed with positions and signed it; is that correct?

A. No, they provided me with a draft, and as I mentioned, we had multiple meetings. It is more productive to explain my thoughts on the subject matter in question by having a conversation with someone than it is to making edits on a Word document, if that's what you are asking. So in our meetings we discussed the document extensively until, you know, as I just said, I was happy with how the declaration explaining my thoughts.

Q. So in the end you were satisfied that the declaration accurately reflected your opinions; is that correct?

A. Yes, after multiple meetings. Yes.

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Q. So to clarify, everything in the declaration is your own words and your own opinions, but there were portions of it drafted by others?

A. Yes.

Q. Is that correct?

A. Correct.

Q. Can you turn back to paragraph 15 of your declaration starting on page 8?

A. Yes.

Q. Paragraph 15 you list the materials that you considered in forming your opinions including the Board's decision to institute this IPR.

Are you aware, Dr. Sanchez, that prior to institution Agilent submitted a declaration from Dr. Brian Cunningham which was filed as Exhibit 2004?

A. I was aware, yes.

Q. When did you first become aware that Dr. Cunningham had submitted a declaration in this proceeding?

A. When I was first aware. One second. Let me think about this. Yesterday.

Q. Let me ask you. Did you become aware of it before submitting your declaration?

A. No. I said yesterday and my declaration was submitted way before, right?

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Q. Can you repeat that? Were you aware that Dr. Cunningham had submitted a declaration before you submitted your declaration?

A. I was not aware. I was made aware yesterday, as I said, and my declaration had been submitted I guess before then yesterday.

Q. Okay. So you submitted your declaration and then after that, yesterday, you learned that Dr. Cunningham had also submitted a declaration?

A. Correct.

Q. Are you aware that portions of your declaration are nearly verbatim to texts found in Dr. Cunningham's declaration?

A. No. My understanding as to why Dr. Cunningham is not here today instead of me is that he had a scheduling conflict.

Q. How do you explain the substantial similarity in language and content between your declaration and Dr. Cunningham's given that you didn't review his declaration before submitting yours?

A. As I said I haven't seen that document to make an assessment as to the similarity between both documents.

Q. Did counsel provide you with suggested language that was also used in Dr. Cunningham's

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declaration?

A. I am not aware.

Q. Can you please turn to paragraph 30 of your declaration on page 14.

A. Yes.

Q. In paragraph 30 you state that the definition section of the '508 Patent explicitly defines the term "millisecond time resolution." Do you see that?

A. Yes.

Q. And in paragraph 31, you state that the '508 Patent's explicit definition refers to the ability to perform at least two consecutive impedance measurements for each and every well being evaluated in the claimed apparatus or system in less than 300 milliseconds from one another.

Do you see that?

A. Yes.

Q. So can you confirm that according to the '508 Patent specification the expressed definition of millisecond patent resolution is the time between two consecutive measurements for each and every well in less than 300 milliseconds?

A. Correct. That is my understanding. And in Agilent's patent they even make an example of what that means in terms of comparing a system that is able to

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measure 96 wells versus one, and they state that a system capable of doing millisecond time resolution measurements on 96 wells is 96 times faster than it is one with just one well, so, yes.

Q. So despite the express definition in the patent you state in your declaration that you used 500 milliseconds rather than 300 milliseconds in your analysis; is that correct?

A. Yes.

Q. So to be clear it is your opinion that the '508 Patent's definition of millisecond time resolution is less than 300 milliseconds, but for purposes of your analysis in this IPR you did not apply that express definition?

A. There are in paragraph number 30 that is quoting verbatim the patent Agilent make examples in where there are preferences in measuring faster than 500 milliseconds, 300 milliseconds and even at the very end it says, to be clear, that is to say in a time period of 40 milliseconds the system has.

So there are multiple examples throughout the patent in where they change or provide different millisecond time ranges, and for the purposes of the declaration I just stick, I believe, to what it was, the largest of the numbers that they have provided as an

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example which is, you know, still three times faster than the 1.5 seconds of that rate that is disclosed in Jones patent.

Q. Okay. We will get to all that. But I just want to confirm there is an express definition for millisecond time resolution that is less than 300 milliseconds, but you didn't apply that definition to your analysis; is that correct?

A. No, I just used 500 milliseconds rather than 300 milliseconds.

Q. Take a look at paragraph 29, Dr. Sanchez. In paragraph 29 you note the '508 Patent statement that the definitions set forth in the definition section prevail over any definition that is incorporated by reference.

Do you see that?

A. Yes.

Q. Does the '508 Patent include a definition for millisecond time resolution that is incorporated by reference from another document or another source?

A. I don't recall at this moment as I am sitting here.

Q. Do you want to take a look at the '508 Patent?

A. You know, it would take me some time to read through the entire patent and the reference through them to make sure that there isn't, you know, any formal

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definition of what that millisecond is a reference to it.

MR. WANG: Counsel, can we take a break --

BY MR. NIGHTINGALE:

Q. To the best of your recollection --

MR. WANG: Can we take a break? Then we can get a hard copy of the '508 Patent in front of Dr. Sanchez. I don't think he brought a hard copy. We can get the office to print a hard copy. And also, you are asking him to look into a couple questions. I think it is a good time for us to take a 15-minute break for him to look for the answers, and also I will have the office print out the '508 Patent.

MR. NIGHTINGALE: Perfect. That sounds good.

(Short break was taken.)

BY MR. NIGHTINGALE:

Q. Dr. Sanchez, we talked about a few items that you were to look into during the break. Did you have an opportunity to look for the title of your master's thesis?

A. Yes, I did find it.

Q. Okay. Can you till me the title of your master's thesis?

A. Yes. Modular Workbench for In-Situ and Remote Laboratories. That was the title.

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Q. Would you be willing to give us a copy of that? Do you have a copy of it now?

A. No, I tried during the break, but I couldn't find printed version available on Google, unfortunately.

Q. Okay. Another thing you said you could look into was when you were first contacted about this matter. Do you have that information?

A. Yes. So the first time that I spoke to Lloyd (phonetic) was on May 2024, and that was via online meeting. So probably a few days before I would have received an email to schedule that online appointment. So a few days before May -- May 24, 2024; did I get it right? Yes. And the first day that I work and was compensated for my work by Lloyd was November 21, last year.

Q. Thank you. Okay. Dr. Sanchez, before the break we were talking about whether the '508 Patent had any definitions for millisecond time resolution incorporated by reference from another document or another source.

Do you recall if the patent does incorporate any such definition by reference?

A. I would have to read with careful detail the patent to give you a correct answer to your question, and this is rather a lengthy document. It would take me

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days to do a proper search to make sure that that reference exists or doesn't exist. So as I sit here, I cannot give you an answer right now.

Q. Let me ask you this then. What was your purpose in referencing that statement, that the definitions from the definition section prevail over ones incorporated by reference. Why did you say that?

A. Because it was my, at that time, when I was reviewing all these materials, my understanding that that definition existed. I just don't recall it now.

Q. I'm sorry, you do believe that there are definitions incorporated by reference for millisecond time resolution?

A. Yeah, I believe the specification, yes, that definition prevails, or the one that is incorporated by reference, yes.

Q. And you believe that there is one or more definitions for millisecond time resolution --

A. Yes.

Q. -- incorporated reference?

A. Yes.

Q. So, Dr. Sanchez, if the '508 Patent indicates that its express definitions are controlling and should prevail, can you explain why you did not apply the '508 Patent's express definition of millisecond time

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resolution?

A. Sorry, I didn't understand the question.

Q. If the '508 Patent tells us that its express definitions are controlling and should prevail, can you explain why you did not apply the '508 Patent's express definition in your analysis?

A. Where does it say "control and should prevail"? Where does it say "control"?

Q. Excuse me. Maybe it doesn't say the word controlling expressly. If the patent tells us that the definitions in the definition section prevail over other definitions can you explain why you did not apply '508 Patent's express definition?

A. Because to me the definition of millisecond time resolution as defined therein by reference, it is in the order of 500, 300 or less millisecond time resolution, and I pick 500 at the maximum.

Q. So you chose the maximum number, that's why you adopted that formulation, the 500 milliseconds formulation --

A. Correct.

Q. -- over the 300 milliseconds formulation, correct?

A. Correct.

Q. So you agree that the patent includes

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statements on both less than 300 milliseconds and also less than 500 milliseconds; is that correct?

A. Yes, it is stated in my paragraph 30.

Q. In your review does the presence of both formulations, less than 300 milliseconds and less than 500 milliseconds, did that create ambiguity as to the meaning of the term "millisecond time resolution"?

A. It doesn't.

Q. Why?

A. Because both are in the millisecond time resolution.

Q. Well, I am talking about the claimed term, Dr. Sanchez, "millisecond time resolution".

A. Correct.

Q. Why does the fact that the patent gives multiple different formulations, one being less than 300 milliseconds and the other one being less than 500 milliseconds, why does that not create ambiguity?

A. Well, it is not a formulation. There is no formula here, right? It is an example in where they define the millisecond time resolution as the ability of assistance to measure repeated measurements over all the wells in that system in the millisecond time resolution. And an example is 500 milliseconds, another example is 300 milliseconds, and examples don't create ambiguity.

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They are examples.

Q. So if you were advising someone in the field on how to design a system to avoid a millisecond time resolution limitation of Claim 1 what threshold would you tell them to consider, 300 milliseconds or 500 milliseconds?

A. For the purpose of my declaration I chose 500 milliseconds.

Q. I understand what you chose, but in terms of what would infringe the patent, how would you advise someone in the field on which threshold to choose?

A. I am not qualified to say what a person that would want to infringe the patent would have to measure to make, you know, an infringement on their definition in the millisecond time resolution.

Q. Let me ask you this. Regardless of what you adopted in your declaration, what would a person of ordinary skill in the art have understood the term "millisecond time resolution" to mean in the context of Claim 1 of the '508 Patent?

A. Making repeated measurements across multiple wells less than one second, which in this case I took 500 milliseconds to do all these measurements, repeated measurements in multiple wells.

Q. So your opinion is that the term just required

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measurements to be any measurements that are less than one second between two consecutive measurements for each and every well of the system?

A. Repeated, yes. That brings the measurement in the millisecond time resolution.

Q. You state in your declaration that the distinction between 300 milliseconds and 500 milliseconds is immaterial to the dispute in this IPR; is that correct?

A. Yes.

Q. What is your basis for saying that the distinction between 300 and 500 milliseconds is immaterial?

A. Because it is irrelevant. Both are in the millisecond time resolution.

Q. So in paragraph 33 you state: For purposes of this IPR proceeding I will adopt 500 milliseconds rather than 300 milliseconds.

Does your declaration provide a reason for adopting 500 milliseconds instead of 300 milliseconds?

A. I don't recall if I provide specification as to why I chose 500. As I said today on the record, I picked the largest number because it is just one instead of, like, having to write many.

Q. I'm sorry, what was the last part of your

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answer?

A. Instead of having to write every time many millisecond, 500, 300, 40, I said 4. Because less than 500 milliseconds is 300 milliseconds. So it is in the millisecond time resolution.

Q. So would a POSA look to the express definition in the definition section of the patent as being a controlling meaning for the term "millisecond time resolution"?

A. Can you explain what the controlled meaning is?

Q. If a POSA wanted to understand what the term "millisecond time resolution" meant for Claim 1, would they look to the expressed definition and understand that as telling them what the term means?

A. Yeah. Let me read, one second, Claim 1.

(Witness perusing document.)

A. Why can I not find the claim? Can you point me to the page where the claim is that you are referring to?

Q. You should have the patent, Dr. Sanchez.

A. I do. It is almost a hundred pages long. I am trying to find the claim that you are referring to.

Q. The claims are at the end of the patent.

A. Yeah, but specifically the page, sorry. I

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know that they are at the end. If the claim mentions millisecond time resolution and throughout the patent the title description -- yes.

Can you repeat the question?

MR. NIGHTINGALE: Could the court reporter please read that question back?

(Record read as requested.)

BY THE WITNESS:

A. I said I didn't understand what you meant by control, but yes, in Claim 1 a person of ordinary skill in the art would understood what the millisecond time resolution means, yes.

Q. And your opinion is that the POSA would understand it as being a time between two consecutive measurements for each and every well that is less than one second; is that correct?

A. Less in the millisecond time resolution which in my declaration is I took that to be 500 milliseconds because there is different examples throughout the patent.

Q. Okay. And didn't you also testify today that the term means less than one second because anything less than one second is within the millisecond time frame?

A. I did not testify that that is my definition

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of millisecond time resolution. I said that my understanding of anything that is in the millisecond time resolution has to be less than the second time resolution. And in my declaration I use that to be 500 milliseconds.

Q. Okay. So let me ask again. What would a person of ordinary skill in the art have understood the term "millisecond time resolution" to mean in the context of the '508 Patent?

A. It would have been 300 milliseconds of repeated -- of measurements in -- time in between repeated measurements across multiple times or 200 milliseconds or less -- those would have been referenced benchmarks for millisecond time resolution.

Q. I am confused because so I understand in your declaration you applied 500 milliseconds, and then in response to my last question you said a POSA would understand it as being 300 or less than 200.

What exactly, what would a person of ordinary skill in the art have understood the term to mean? What is the specific threshold that a POSA would understand as the term means in Claim 1?

A. Based on Claim 1 would have been measured, as I mentioned, repeated measurements that across two or all -- the multiple wells within a system that is 300

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milliseconds or less and that includes 200 milliseconds and 40 milliseconds. That is what a person of ordinary skill in the art would have understood by reading Claim 1 of '508. And in my declaration, as I mentioned before, to not repeat putting a long list of millisecond time resolutions I just picked 500.

Q. So I am still not understanding, Dr. Sanchez. You are saying only understand the threshold to be 300 milliseconds --

A. Or less.

Q. Okay. So your testimony is that the POSA would look to the expressed definition of where it says 300 milliseconds and they would understand that to be the threshold for the claim?

A. No, I don't think that is necessarily a threshold. It is an example of what a millisecond time resolution means in repeated measurement across all multiple wells. But I don't think that defines a threshold.

Q. What I am trying to understand, what is the threshold? For example, does a -- let me ask you this way, Dr. Sanchez. If I have a system that takes measurements at the time resolution of 600 milliseconds, if all of the other limitations were satisfied, would that be within the scope of Claim 1?

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A. It would have been a millisecond time resolution system.

Q. So your answer is yes, 600 milliseconds would be within the scope of Claim 1?

A. Yes.

Q. How about 700 milliseconds, is that within the scope of Claim 1?

A. Yes.

Q. 999 milliseconds?

A. Yes.

Q. So a POSA would understand that any time resolution less than a second is millisecond time resolution in a context for Claim 1?

A. In the millisecond time resolution, yes.

Q. I am trying to understand, Dr. Sanchez, how would a POSA understand that given that the patent expressly tells us that the express definition is less than 300 milliseconds? Would why would a person of ordinary skill in the art think it to be these higher numbers when the patent expressly says 300 milliseconds?

A. Can you repeat the question again?

Q. How do you reconcile your definition or your understanding of what a POSA would think the term means with the express definition provided in the patent?

A. Because my interpretation of, in my

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declaration, of what the millisecond time resolution is just referring to the time in between repeated measurements. In Agilent's Patent '508 there is a specific case use application that requires measuring fact in all wells for measuring cardiomyocytes contractions. So there is an application component to the '508 Patent that hasn't been included in this conversation.

Q. Why would a POSA not read the expressed definition and think that that sets the threshold to be less than 300 milliseconds?

A. Because it is not the entirety of the patent.

Q. So you don't think there is any ambiguity between having an express definition of less than 300 milliseconds and then having other examples that are, for example, less than 500 milliseconds?

A. No.

Q. How would a POSA know which one governs?

A. It is up to them to know how they want to implement their system, no? If it is in the millisecond time resolution, they will choose whatever fits their requirements.

Q. Is there any guidance in the '508 Patent that would help a POSA determine whether the term "millisecond time resolution" requires less than 300

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milliseconds or less than 500 milliseconds?

A. Should be driven by the application. Because they do explain in paragraph 40 -- column 10 examples of what they aim to measure which is the bidding cycle of cardiomyocyte, to have enough temporal resolution. The problem -- sorry, I haven't finished. The problem in trying to measure things that have a dynamic component requires that the measurement needs to be fast enough to monitor that cellular activity, and if it is too slow a POSA, person of ordinary skill in the art, would have understood that that variation, because it is now under samples, would look like notes.

Q. Do you understand, Dr. Sanchez, that the term "millisecond time resolution" in Claim 1 needs to mean one certain thing? It can't vary between different applications. There has to be a specific meaning for it. Do you understand that?

A. Yes.

Q. Okay. So is there any objective guidance in the '508 Patent that would help a POSA determine is it less than 300 milliseconds or is it less than 500 milliseconds?

A. I have to look at it, sorry. There is a definition in what the millisecond time resolution is in terms of a system that is capable of measuring at the

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millisecond time resolution 96 wells versus just one, and the statement is that the system with 96 wells is 96 times faster than one that just have one well, but I would have to go through the entire patent to look for an expressed definition, if that's what you are asking.

Q. Do you think the fact that the '508 Patent provides examples of both less than 300 milliseconds and also less than 500 milliseconds, would that make the patent, or rather the meaning of the term "millisecond time resolution" open to multiple interpretations?

MR. BABCOCK: Objection.

BY THE WITNESS:

A. As I mentioned before, no, it is not ambiguous. It needs to be a measurement that happens in the millisecond time range. That's the definition.

BY MR. NIGHTINGALE:

Q. Okay. Can you please turn to paragraph 25 of your declaration starting on page 12.

A. Yes.

Q. Paragraph 25 you state: Although impedance-based cellular analysis had been known in 2008, the '508 Patent was the first to describe an impedance-based cellular analysis with millisecond time resolution which was accomplished when an impedance analyzer measures two consecutive impedances of multiple

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wells simultaneously or nearly simultaneously.

A. Correct.

Q. Do you see that?

A. Yes.

Q. What is the basis for your assertion that the '508 Patent was the first to describe an impedance-based cellular analysis system with millisecond time resolution?

A. Because I have prior knowledge of the state of the art and up to about then all systems were in the second time resolution, such as Jones, which is 1.5 seconds.

Q. So you are relying exclusively on your personal knowledge as supporting that statement?

A. And the fact that Jones is part of the documentation for this cross-examination.

Q. So the basis for your opinion that the '508 Patent was the first to describe impedance-based cellular analysis and millisecond time resolution is based on your personal knowledge and Jones?

A. Correct.

Q. Is that correct?

A. Yes.

Q. Do you believe that personal involvement in a field is a substitute for a documented review of the

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literature when making statements about what was known in the art previously?

A. As valid as.

Q. I'm sorry?

A. As valid as, both equally valid.

Q. Would you agree that experts can sometimes be unaware of obscure prior art?

A. Yes.

Q. As an expert witness do you believe it is sufficient to rely on your own knowledge and experience when making categorical statements about the state of the art?

A. That's what my expert opinion is. It is an opinion based on my knowledge of the field, and I am not aware of prior art to '508 in where anyone had proposed impedance cellular based analysis in the millisecond time resolution.

Q. So if another expert in the field disagreed with your statement that the '508 Patent was the first to describe impedance-based cellular analysis with millisecond time resolution, how would you resolve that disagreement without objective evidence?

A. I would like to see the objective evidence that that person otherwise.

Q. So sitting here today can you give me any

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specific evidence you have to support the statement that the '508 Patent was the first to describe an impedance-based cellular analysis with millisecond time resolution?

A. The literature that I reviewed as part of my declaration and my knowledge regarding the state of the art in 2008.

Q. And to be clear, the literature that you reviewed for your declaration is only what is in paragraph 15, correct?

A. The one in my declaration. I don't recall the number of it. Yes.

Q. You didn't review any other literature in preparing your declaration?

A. I believe I answered that question before, yes, I did not.

Q. Have you reviewed every piece of literature relating to impedance-based cellular analysis up to the priority date of the '508 Patent?

A. Can you repeat the question? Sorry.

Q. Have you reviewed every piece of literature relating to impedance-based cellular analysis up to the priority date of the '508 Patent?

A. You said every? Did you use the word "every"?

Q. I did, yes.

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A. So then no. Every, no.

Q. How can you be confident then in making a categorical statement like you make in paragraph 25?

A. Yeah, I'll be happy to explain. My PhD thesis was focused on enabling accurate measurement at shorter measurement time which is pertinent to the application of being able to measure an impedance in the millisecond time resolution. And I don't know if you are aware, but when one does a PhD it is usually to advance the body of knowledge that there is at that moment in time.

So my specific PhD was to study the compromise and trade off between measurement time and measurement accuracy. So part of my state of the art knowledge that I was referring to that is not included in the paragraph 15 in the list of documents that I have reviewed is all my prior work that I did throughout all my years of researcher, starting with my PhD, that lead me to find that there was no evidence that would enable, that would claim how to or disclose how to develop a system capable of measuring in the millisecond time resolution.

Q. Let me ask a few questions about the last part of your statement in paragraph 25 where you say that impedance-based cellular analysis with millisecond time resolution was accomplished when an impedance analyzer measures two consecutive impedances of multiple wells

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simultaneously or nearly simultaneously.

Do you see that?

A. Yes, I found it.

Q. Does Claim 1 in the '508 Patent require simultaneous or nearly simultaneous measurements of multiple wells?

A. It is a use of words to describe that those measurements are being performed in a repeated fashion across all wells at the same time, but because, you know, it is difficult to guarantee that something happens at the same exact atomic time the use of nearly simultaneously was provided as a way to explain that virtually they look as if they had happened simultaneously.

Q. Okay. I am not asking so much about the word, "nearly". My question is a little more general than that. It is about Claim 1 of the '508 Patent. Does Claim 1 require simultaneous measurements of multiple wells?

A. Yeah, it is my understanding that that is what it does because it is the only way that you can achieve this consec -- based on '508, this consecutive impedance measurement in that millisecond time resolution. So they need to happen simultaneously.

Q. Is there any language in Claim 1 that requires

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simultaneous measurements of multiple wells?

A. If you are asking me if the word "simultaneous" appears in Claim 1, I don't see it.

Q. To be clear, I am not asking whether the word "simultaneous" appears, just does Claim 1 require simultaneous measurements? Even if not expressed in that verbiage, does Claim 1 of the '508 Patent require simultaneous measurements of multiple wells?

A. One second. Will you repeat the question?

Q. Does Claim 1 of the '508 Patent require simultaneous measurements of multiple wells?

A. Claim 1, per se, does not require simultaneous measurements.

Q. So you agree that Claim 1 could be satisfied in a system that uses serial measurements?

A. Can you elaborate on that?

Q. I just want to understand, Dr. Sanchez, or just have you confirm, you said that Claim 1 does not require simultaneous measurements of multiple wells. So accordingly, I understand your opinion to be that Claim 1 could be satisfied with serial or sequential measurements of multiple wells.

MR. BABCOCK: Objection.

BY THE WITNESS:

A. Well, my understanding is that in order to

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achieve the millisecond time resolution you need to guarantee that you measure them simultaneously, right? Multiple wells at the same time.

Q. Okay. So your opinion is that Claim 1 doesn't have any language requiring simultaneous measurements, but you are interpreting the claim to require that; do I have that correct?

A. In order to achieve the millisecond time resolution, yes.

Q. So going back to your statement in paragraph 25, is it your position that the '508 Patent is only the first to describe millisecond time resolution in the context of simultaneous or near simultaneous measurements of multiple wells --

A. No.

Q. -- as opposed to a single well or sequential --

A. I apologize. I thought you were finished.

Q. Is it your position that the '508 Patent is only the first to describe the millisecond time resolution in the context of simultaneous or nearly simultaneous measurements of multiple wells?

A. Yes.

Q. So are you conceding that the prior art may have caused impedance-based cellular analysis with

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millisecond time resolution, just not ones that measure multiple wells simultaneously?

MR. BABCOCK: Objection.

BY THE WITNESS:

A. The previous art which refers to Jones describes, as an example, the measurement of one well in a millisecond time resolution, but because of how it teaches how to measure the totality or the entirety of all the wells, that inducts being 1.5 seconds which is the required. So I don't think that serves as prior art of a system capable to achieving millisecond time resolution. Which the definition is repeated measurements across all the wells throughout the system in the millisecond time resolution.

Q. So you told me that your position is that '508 Patent is only the first to describe millisecond time resolution in the context of simultaneous measurements of multiple wells, correct?

A. Correct.

MR. BABCOCK: Objection.

BY MR. NIGHTINGALE:

Q. So there could be prior systems that had no second time resolution measuring a single well; is that correct?

A. There is --

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MR. BABCOCK: Objection.

BY THE WITNESS:

A. There is the Jones patent that only measures one well in the context of a millisecond, in the time frame of a millisecond, but not in the definition of what Agilent describes as millisecond time resolution. It's -- you have to be careful here with the use of the wording, just millisecond, or the definition of millisecond time resolution. It is two different things.

Q. Dr. Sanchez, in paragraph 25 of your declaration you state that the '508 Patent is helpful to monitor fast cellular activities such as excitation and contraction coupling of the cardiomyocytes, cardio safety profiling slash analysis for drugs or drug candidates, functional studies of cardiomyocytes derived from stem cells, cardio disease modeling by gene modification of cardiomyocyte, and physiological and disease processes of muscle cells in a high throughput manner.

Do you see that?

A. Yes.

Q. Does the term "throughput" refer to the rate at which impedance measurements can be collected from wells in the system?

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A. I don't recall. I would have to read '508.

Q. As an expert in this field, what does the term "throughput" mean to a person of ordinary skill in the art?

A. Many things, depending on the context.

Q. Well, in the context of the '508 Patent, does it mean a rate at which impedance measurements can be collected?

A. In this case high throughput would be the ability to measure multiple wells, in this case 96, within the millisecond time resolution.

Q. 96 wells it needs to be?

A. No, it doesn't need to be 96. 96 is just an example.

Q. So the term "throughput" means the rate at which impedance measurements can be collected from wells in the system; is that correct?

A. It is what I just said before.

Q. Do you agree that throughput is based on the number of impedance measurements that are taken and the time required to take those measurements?

A. Not necessarily, no.

Q. Why not?

A. Because I just said before, to answer your question, high throughput is the ability of a system to

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collect repeated measurements across all the wells in the millisecond time resolution.

Q. I am just asking about the term "throughput," not "high throughput." Would the term "throughput" be defined by the number of impedance measurements that are taken and the time required to take those measurements?

A. No.

Q. Okay. Why?

A. I thought I answered that question. Because my understanding of high throughput here refers specifically to the availability of the technology system in this case to perform repeated measurements across all wells simultaneously or near simultaneously within a millisecond time resolution.

Q. Again, I am just asking about the term "throughput."

A. That's my definition of "throughput."

Q. Okay. You keep saying high throughput.

A. Oh, so remove the word "high." The same for throughput.

Q. Tell me again what your definition of "throughput" means.

A. For me throughput, in the context of my declaration, refers to the availability of the Agilent invention to perform repeated measurements across all

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wells simultaneously or near simultaneously within the millisecond time resolution.

Q. So somehow the word "throughput" means all that, it means simultaneous measurements?

A. No, I just added simultaneously to make my point clearer to you.

Q. Would you mind just giving me a plain definition of what a person of ordinary skill in the art would understand the term "throughput" to mean?

A. As I said, in the context of the Agilent's invention, the ability to perform repeated measurements across all wells within the millisecond time resolution.

Q. So in paragraph 25 of your declaration you list several applications to the '508 Patent, including monitoring excitation and contraction coupling of cardiomyocytes, cardio safety profiling or analysis for drugs or drug candidates, functional studies of cardiomyocytes derived from stem cells, cardio disease modeling by gene modification of cardiomyocytes, and physiological and disease processes of muscle cells.

Do you see that?

A. I don't see the muscle cells. Where do I say "muscle cells"?

Q. Looking at paragraph 25, Dr. Sanchez.

A. Oh, I am looking at it. I just don't see

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where I say explicitly "muscle cells".

Q. Okay. Do you want to read it again? It is in there.

A. This new system is particularly helpful to monitor fast cellular activities such as excitation and contraction coupling of cardiomyocytes, cardio safety profiling analysis for drug candidates, functional studies of cardiomyocytes derived from stem cells, cardio disease modeling by gene modification of cardiomyocytes and -- oh, yes, and physiological and disease process of muscle cells in high throughput manner, yes.

Q. Is each of those applications described in the '508 Patent?

A. I haven't reviewed the list of applications in the '508 Patent as to the types of cells that are meant to be used with their invention. So as I sit here, I don't have an answer to your question without looking at the patent and the context of their use.

Q. Okay. Would a POSA have understood the '508 Patent to be applicable to all the different applications that you mentioned in paragraph 25?

A. I think I just answered your question. I would have to look at the patent carefully for the applications that where enumerated and see if a person

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of ordinary skill in the art would have assumed that to be the case. So as I sit here, I don't have an answer for you right now.

Q. Well, I am not talking about whether these applications that are described in the patent, just would a POSA have understood the '508 Patent be applicable to all of these different applications that you list in paragraph 25?

A. As I said, I would have to do -- study the patent to see what a person back then would have thought to be applications of the technology.

Q. So why did you include all these applications if you don't know if they are described in the patent, you don't know if a POSA would understand the invention as being applicable to these applications?

A. You are asking me if a person of ordinary skill in the art would have thought of all of these applications based on the knowledge that is provided in the patent, and they do talk about cardiomyocytes. I would have to look at all these other different cell types and applications to see if that would have been also part of the body of knowledge available to the POSA.

Q. So sitting here today you just know that the patent is applicable to cardiomyocytes?

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A. And other applications. I just don't recall them all.

Q. So the '508 Patent has multiple applications; is that correct?

A. I don't remember exactly the extent of the applications that are proposed with the '508 Patent, so I am afraid I cannot tell you that that is the extent of it.

Q. Okay. You are not sure if the '508 Patent has any applications beyond cardiomyocyte monitoring?

A. I would have to read carefully to give you a correct answer, but as I sit here, that would take time to review.

MR. WANG: Counsel, while you're looking, Ms. Reporter, I just want to quickly check, around 12 o'clock Mr. Babcock had three or four quick objections. Is that on record?

THE COURT REPORTER: Yes.

MR. WANG: Okay. Thank you.

BY MR. NIGHTINGALE:

Q. Can you take a look at column 2, lines 62 to 66.

A. Okay.

Q. So the patent says, the system and methods can be used for formalized safety assessment, screening for

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novel compounds which monitor cardiomyocyte function in a specific manner, and assessment of genes involved or potentially involved in cardiac function.

Do you see that?

A. Yes.

Q. So the '508 Patent would be applicable to these different applications; is that correct?

A. Yes.

Q. Would a POSA reading the '508 Patent have considered all of the different applications described in the patent?

A. Sorry, I don't understand the question.

Q. Would a POSA have understood some of the applications but ignored some of the different applications that are listed in the patent?

A. I lost you after the but. But ignored you said?

Q. Yeah. My question is, the patent gives us multiple applications. My question is, would a POSA reading the '508 Patent have considered some of them but ignored some of the applications that are described in the patent?

MR. BABCOCK: Objection.

BY THE WITNESS:

A. I don't know what a POSA would have ignored or

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not.

Q. I believe you are a POSA, Dr. Sanchez?

A. I am just saying I don't know what a POSA would or would have not ignored, which was what your question.

Q. You don't know how a POSA would have understood the patent?

A. No, that's not what I said. You mentioned that if a POSA would have ignored other applications or applications described in the patent, and I said that I don't know.

Q. Would you as a POSA ignore some of the applications that are described?

MR. BABCOCK: Objection.

BY THE WITNESS:

A. Yeah, is that relevant?

Q. Can you answer the question?

A. Can you repeat the question, please.

Q. Would you as a POSA, Dr. Sanchez, ignore some of the applications that are described in the '508 Patent?

MR. BABCOCK: Objection.

BY THE WITNESS:

A. Ignored. Sorry, I need a little context here. Ignore as in to do what?

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Q. Would you just disregard some of them or would you read the entire patent?

A. Usually, you know, when I am reading and educating myself, I read the whole document.

Q. Dr. Sanchez, let's look at paragraph 25 again, starting on page 12. In that paragraph you state that the '508 Patent describes an impedance-based cellular analysis system with millisecond time resolution and that this system is particularly helpful for monitoring fast cellular activities.

Do you see that?

A. Yes.

Q. Is the ability to monitor fast cellular activities directly linked to the system's capability to form measurements in millisecond time resolution?

A. The system being able to perform measurements within the time millisecond resolution enables the application to monitor fast cellular activities. As I mentioned before, measuring not at the millisecond time resolution would provide data that would look like noise due to the under sampling. So the technology enables faster cellular activity monitoring.

Q. So the millisecond time resolution addresses the challenge of capturing rapid changes in cellular behavior, correct?

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A. No, that's not what I said. I said that it enables it.

Q. It doesn't address it?

A. No. Address, I don't know what the challenges might be to monitor fast cellular activity. I am saying that the technology that is disclosed in the patent is meant to enable measurement of fast cellular activity monitoring.

Q. At the time of the invention was it recognized by POSAs that certain cellular activities occurred on a millisecond time scale?

A. I need to think. I don't know, to the best of my knowledge.

Q. You are not sure if a POSA knew that?

A. Yeah, correct. That's what I said, yes.

Q. But you are here today telling us about what a POSA would have understood as the relevant time frame?

A. The relevant time frame for a system that is capable of measuring impedance across all the wells in the millisecond time resolution. I don't know if a POSA would have thought that that's required to monitor fast cellular activities. I said that the technology enables that.

Q. If a cellular phenomenon occurred on the order of milliseconds, would a measurement system that had a

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resolution on the order of one second or longer be able to effectively monitor that phenomenon?

A. Excuse me. Can you repeat the question?

Q. If a cellular phenomenon occurs on the order of milliseconds, would a measurement system with a resolution on the order of one second or longer be able to effectively monitor that cellular phenomenon?

A. I don't think so, no.

Q. So you agree that to accurately monitor cellular activity that takes place on a millisecond time scale a system must be capable of taking measurements at a comparable or faster time resolution?

A. Across all wells, yes, that are being measured by that system.

Q. So a skilled artisan at the time of the '508 Patent would have understood that monitoring fast cellular activities required measurement intervals that are at least as fast as the cellular events themselves?

A. Based on the example provided with cardiomyocytes, yes.

Q. Dr. Sanchez, can you look at Claim 1 of the '508 Patent again, please.

A. Yes.

Q. Claim 1 in the '508 Patent recite the multiwell plate comprising a plurality of wells.

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Do you see that?

A. No. What page are you? Sorry.

Q. I am looking at Claim 1 of the '508 Patent.

A. Can you point me to the page, please.

Q. Well, it looks like Claim 1 starts at column 46 of the '508 Patent.

A. Okay. What is the question?

Q. Do you see where the claim recites a multiwell plate comprising a plurality of wells?

A. Yes, that would be (A); is that correct?

Q. Yes.

A. In column 47?

Q. That's correct.

A. Okay.

Q. The plurality of wells means two or more wells; is that correct?

A. Yes.

Q. Claim 1 of the '508 Patent recite at least two analog-to-digital conversion channels; is that correct?

A. Yes.

Q. That term, "at least two analog-to-digital conversion channels," means two or more analog-to-digital conversion channels, correct?

A. Correct.

Q. Do you agree that Claim 1 can be satisfied by

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a system that includes an impedance analyzer with only two analog-to-digital conversion channels?

A. No, I don't agree with that statement.

Q. Why not?

A. Because it was connected to those analog converters that will determine whether the system can achieve the millisecond time resolution.

Q. More generally, if as long as all the other claimed limitations were met, Claim 1 could be satisfied by an impedance analyzer with only two analog-to-digital conversion channels, correct?

A. If the requirement is at least two, and you are proposing a system that has two, then that, what you said, is correct, in isolation.

Q. So if all the other claim limitations were met, would Claim 1 cover a system in which each of two wells has its own dedicated analog-to-digital conversion channel such that there is one-to-one correspondence between wells and channels?

A. Can you repeat the question? Sorry.

Q. If all the other limitations were met, including millisecond time resolution limitations, would Claim 1 cover a system that has two wells with each well having its own dedicated analog-to-digital conversion channel?

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A. If they are both being measured, you know, within the time resolu -- millisecond time resolution, which means in parallel, then that would be what the patent says, yes.

Q. So in that configuration with two wells and two analog-to-digital conversion channels, there wouldn't be any switching because each well has its own analog-to-digital conversion channel, correct?

A. How can you make that assessment?

Q. Well, we said that there is two wells and two channels.

A. Sorry, I fail to understand why switching is not required.

Q. Because each well has its own channel so...

A. So what?

Q. If a channel is dedicated or has its own dedicated well, then there wouldn't need to be any switching; is that correct?

A. Again, that is not correct, no.

Q. Okay. Why would switching be required?

A. It depends on how you -- what you connect the analog-to-digital convertor to, right? In the case of Jones they have analog-to-digital converters and they rely on switching.

Q. Okay. But in the context of Claim 1 if you

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have two wells and two channels, would any switching be required?

A. Again, it depends where you connect the analog-to-digital converters to.

Q. But you wouldn't need to switch channel between different wells, correct?

A. It depends on -- I don't think we are understanding each other. It depends on your ability to process data from multiple channels. The fact that you have dedicated analog-to-digital converters has nothing to do with whether you need or done switching, which is your point.

Q. Well, I just don't understand if each well has its own dedicated channel, then why would there need to be any switching between wells?

A. Because you don't know what those are connected to.

Q. What do you mean? What?

A. I don't know. You proposed the problem. I don't know the boundaries of your problem.

Q. You would agree that in the system that just two wells and two dedicated analog-to-digital conversion channels, each channel can be used exclusively to measure the associated well?

A. Measure is a loaded word. Like, you are able

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to maybe measure coolant on both. It doesn't mean that you are able to process the impedance for each well. And that is not contemplated on your scenario. So, no, I don't agree with your statement.

Q. Dr. Sanchez, you reviewed the specification of the '508 Patent; is that correct?

A. I read it as part of my literature review, yes.

Q. Does the '508 Patent describe that the number of wells in the system can vary?

A. There is an example where they talk about a system capable of measuring, let's say, one well or 96 wells.

Q. Does the specification state that the number of wells can be between 2 and 1,536?

A. As I am sitting here I don't recall exactly word by word what the number of wells is in '508 Patent.

Q. Okay. Can you turn to column 23 of '508 Patent, and take a look at lines 20 through 23.

A. Can you repeat the numbers, number lines, please.

Q. Column 23, lines 20 through 23.

A. 20 to what?

Q. 23.

A. Okay.

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Q. So the patent states that the device in the present invention preferably has between 2 and 1,536 wells, correct?

A. I am not looking at that. You said column 24?

Q. Column 23, lines --

A. Oh, 23, got it. One second. Got it.

Q. So the patent says the device of the present invention preferably has between 2 and 1,536 wells; is that correct?

A. Correct.

Q. And a POSA would understand that the number of wells within the scope of the '508 Patent could be between 2 and 1,536; is that correct?

A. Yeah, a plurality of wells, yes.

Q. I am looking at Claim 1 again. Claim 1 recites an impedance analyzer; is that correct?

A. I mean under specification it says an apparatus for continuous label free real time monitoring of cells that uses impedance-based analysis and it is made of several things. That's what Claim 1 says.

Q. My question is, does Claim 1 recite an impedance analyzer, among other limitations?

A. You said limitations?

Q. Does Claim 1 recite an impedance analyzer, among other limitations?

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A. Yes.

Q. Does Claim 1 require the impedance analyzer to take measurements at more than one frequency?

A. One second. Let me read the Claim 1.

(Witness perusing document.)

A. Sorry, what was the question?

Q. Does Claim 1 require the impedance analyzer to take measurements at more than one frequency?

A. It is not required. It is implicit in the use of the word impedance analyzer. An impedance analyzer is understood as a system capable of measuring more than one frequency.

Q. My question is not what the impedance analyzer is capable of, but does Claim 1 require repeat measurements at multiple frequencies?

A. There is no explicit requirement written in Claim 1. The system, though, by the use of the word impedance analyzer, includes the measurement of multiple frequencies, but it is not an explicit requirement.

Q. The '508 Patent specification describes configurations in which the system takes impedance measurements at a single frequency; is that correct?

A. Can you point me where that is written?

Q. If you look at column 15, lines 40 to 42.

A. 15, 40 to 42. Okay. What is the question?

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Q. Does the specification describe the system in which impedance measurements can be taken as a single frequency?

A. Yeah, single or multiple.

Q. Does Claim 1 of the '508 Patent require the impedance analyzer to use any particular frequency for measurements?

A. Claim 1 you said?

Q. Yes.

A. I don't see that as part of Claim 1.

Q. So Claim 1 does not limit the frequency at which the impedance analyzer must operate, correct?

A. It is not explicit in Claim 1.

Q. Looking back to column 23 of the '508 Patent, can you look at lines 37 to 40?

A. 37 to 40. Okay.

Q. This portion of the patent says that the impedance analyzer is capable -- excuse me -- capable of measuring impedance in a frequency range of one hertz to one megahert -- megahertz, excuse me. Is that correct?

A. That's what it says, yes.

Q. So would Claim 1 encompass taking measurements at one hertz?

A. It doesn't restrict the frequency that needs to be measured. It defines the impedance analyzer as

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being able to measure between one hertz to one megahertz. It doesn't mean that -- sorry. It doesn't mean that the system has to measure at one hertz. It is the same way that if you think of, you know, a cartiology right, the cart can go up to, I don't know, 120 miles per hour, it doesn't mean that you have to drive at 120 miles per hour.

Q. Right. So within the scope of Claim 1 the measurements could be at 10 kilohertz, for example?

A. If it is within the range that is specified, yes.

Q. And the measurement in Claim 1 could be up to at least one megahertz; is that right?

A. The definition of impedance analyzer is up to one megahertz.

MR. NIGHTINGALE: Can we take a 15-minute break and then we can finish up?

MR. WANG: Should we take a lunch break because it is 12:45 local time in Chicago? I don't know what your plan, how much longer you need this afternoon.

MR. BABCOCK: Well, Joshua, if you are close to be being finished, we can take a short break and then --

MR. NIGHTINGALE: Yeah, I don't have too much more.

(Short break was taken.)

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BY MR. NIGHTINGALE:

Q. Okay. I have uploaded a document with the file name Jones doc PDF. This document bears the label Axion Exhibit 1006. Dr. Sanchez, if you don't have a copy of Jones Exhibit 1006, can you please download it and print it, if you would like?

MR. WANG: Hang on a second.

BY MR. NIGHTINGALE:

Q. Dr. Sanchez, quick cleanup question. During either of the breaks that we have had, or during any of the breaks that we have had, did you discuss the substance of your testimony with anybody?

A. No, I did not.

Can you email it to me; is that possible?

MR. WANG: Counsel, do you want to print a hard copy or send an email to Dr. Sanchez?

MR. NIGHTINGALE: Sending him a clean copy is fine by me.

THE WITNESS: Okay. I have it.

BY MR. NIGHTINGALE:

Q. Can you turn to paragraph 30 of Jones, in the 2000 -- excuse me, Exhibit 1006?

A. Okay.

Q. The first sentence of paragraph 30 reads: Each well is subject to a step sweep, parentheses, a

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series of single frequency bursts, one burst for each selected frequency, period.

Do you see that?

A. Yes.

Q. And then later in that paragraph Jones states: From preliminary modeling and testing no more than 68.2 milliseconds per well for all frequencies is required to obtain sufficient steps.

A. Okay.

Q. Do you see that?

A. Yes.

Q. What is happening during the 68.2 milliseconds described in paragraph 30 of Jones?

A. From the description of Jones it refers that a single well is measured with a step sweep.

Q. In a step sweep means measurements are taken at multiple frequencies; is that correct?

A. One after the other.

Q. Approximately how many measurements would be taken during the 68.2 millisecond time period?

A. You are doing a step sweep measurement so from the beginning until the end, just one.

Q. But a measurement would be taken at each of the different frequencies, correct?

A. No, because the measurement is a -- the

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measurement is a step sweep measurement. You measure from the beginning until the end. The measurement time ends when the last frequency has been measured.

Q. What is the terminology -- excuse me. What is the correct terminology that I should be using instead of measurement? Is it taking samples at different frequencies?

A. I don't know what is the right terminology that you want to use. That depends on the question that you want to ask me. I don't know.

Q. Well, it seems that measurements are taken at multiple frequencies, but you are telling me that that would all be considered one measurement. But it is correct -- isn't it true that different frequencies are being used for measurements?

A. There are different frequencies that are part of the step sweep and the measurement time is from the beginning until the end of all the sweeps. So you only do one measurement. Every step sweep is one measurement.

Q. How many samples are obtained during the 68.2 milliseconds time period?

A. How am I supposed to know that?

Q. Well, approximately, what would a POSA understand the number of samples to be obtained during

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that period?

A. There is no information as to the number of samples that are obtained within that period.

Q. Well, if let's say four frequencies are used, would four samples be taken?

A. It depends.

Q. At least?

A. It depends on how you define "samples".

Q. I am using the word "sample" as it is used in paragraph 30 of Jones.

A. Let me see. It says sufficient samples. It doesn't define samples.

Q. Well, if you are using multiple frequencies, would at least one sample be taken for each of the different frequencies?

A. Again, sorry, I fail to understand. I don't know what you mean by sample.

Q. I am using the term "sample" as it is being used in that paragraph of Jones.

A. It says sufficient samples, but I don't know what sufficient samples is. I am not sure if I am making myself clear.

Q. Dr. Sanchez, if the goal of the measurement system is to achieve the smallest possible form factor, would using a single measurement board result in a

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smaller form factor than using multiple identical measurement boards arranged in parallel?

A. Can you repeat the question? Sorry.

Q. If the goal of a measurement system is to achieve the smallest possible form factor, would using a single measurement board result in a smaller form factor than using multiple identical measurement boards arranged in parallel?

A. I don't think necessarily the physical arrangement of boards can be tied into make a claim as to whether that will lead to a smaller or bigger form factor instrument. It is my opinion that in Jones the intent of shrinking the system is to -- how Jones achieved the shrinking the system is by physically arranging the other boards in parallel to each other which saves time at the cost of duplication. But that increases temperature, and that's -- and the entire patent is about maintaining thermal drift and accuracy to achieve the desired update period which is 1.5 seconds.

Q. Sorry, let me circle back to the 68.2 millisecond disclosure in Jones in paragraph 30.

A. Um-hum.

Q. During the 68.2 millisecond measuring time, how many different frequencies are sampled in a step

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sweep?

A. It depends of how many frequencies are part of the step sweep.

Q. What would be a typical number of frequencies for a step sweep at the time of the '508 Patent?

A. More than one.

Q. That's how a POSA would understand a disclosure? They wouldn't understand it to be more than one?

A. A step sweep is a measurement making in more than one frequencies are measured one after the other. So a person of ordinary skill in the art would understand there that is at least two, because if it is just one, then it is not called a step sweep.

Q. Typically, however, at the time of the '508 Patent invention what would be a typical number of frequencies for a step sweep measurement?

A. Again, two or more.

Q. Dr. Sanchez, have you ever used a step frequency sweep to measure impedance?

A. Yes.

Q. When you did so, how many frequencies did you use?

A. In some instances six; in some instances ten; in some instances three.

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MR. NIGHTINGALE: Okay. I don't have anymore questions.

MR. BABCOCK: Okay. Great. Thanks, Josh. If you guys can hang out for just a few more minutes. I do have a few, actually three follow-up questions for Dr. Sanchez. I am happy to take a break, if you like, or just push on through if that's okay with everybody.

MR. NIGHTINGALE: It is okay for me.

THE WITNESS: It is okay for me, too.

MR. BABCOCK: Dr. Sanchez, are you okay --

THE WITNESS: Yes. I said yes.

CROSS-EXAMINATION

BY MR. BABCOCK:

Q. Okay. As you know, I am Brent Babcock. I represent Agilent, and obviously we know each other. So, Dr. Sanchez, thanks for coming in today and answering Axion's questions. I have been following along, and because we have a virtual transcript, I am not actually seeing the transcript online, I just wanted to clarify three points that I heard, I may have misheard. Is that okay?

A. That's okay by me.

Q. Okay. On the first, it was around 8:30 this morning my time, which would be about 10:30 your time, you were discussing paragraphs 52 to 54 with

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Mr. Nightingale. Do you recall that discussion?

A. 52, 54 of where?

Q. 52 through 54, and at the end of 54 there is a discussion about a mention of the word "obvious."

Do you see that?

A. Yes, regarding my declaration, correct?

Q. Your declaration, right. And the transcript reads -- well, the transcript will say what it says, but it says, in addition with Xu would have rendered the exhibit, that is the Exhibit No. 508, invalid because of obviousness.

Is that what you meant to say?

A. I meant --

MR. NIGHTINGALE: Objection. Leading.

BY THE WITNESS:

A. I meant to say that Xu and Jones combined don't make '508 obvious.

Q. Do not?

A. Do not.

Q. Do not as opposed to do?

A. Do not.

MR. NIGHTINGALE: Objection. Leading.

BY MR. BABCOCK:

Q. Okay. Thank you. Just wanted to clarify that. Thank you, Dr. Sanchez.

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Second issue that wasn't apparently clear was around 8:55 my time, about 10:55 there. Do you recall in your discussion about paragraph 16 to 20, in your declaration about a person of ordinary skill in the art?

A. Yes.

Q. In paragraph 19 you state that at the time of the invention you were a person of skill in the art. Do you see that?

A. Yes.

Q. Is that opinion of yours still correct?

A. Yes.

MR. NIGHTINGALE: Objection. Leading.

BY THE WITNESS:

A. At that time --

Q. Can you explain?

A. Yes. At that time I was still an undergraduate with an electronic and telecommunication degree, a B.S. That's equivalent to a B.S., yes.

Q. Okay.

A. And with the experience related to the usage of measuring, so, yes.

Q. So do you satisfy that definition that is forth --

A. Yes --

Q. -- in your declaration?

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MR. NIGHTINGALE: Objection. Leading.

BY THE WITNESS:

A. -- to the best of my knowledge.

Q. And in paragraph 20 you state that you applied that 2009 perspective in providing your opinions. Do you see that?

A. Yes.

Q. Can you explain further what you mean by that?

A. Yes. That based on the body of knowledge that a person of ordinary skill in the art in 2009 would have had, the combination of Xu and Jones together wouldn't have rendered the '508 Patent obvious.

Q. Would or would not?

A. Not.

Q. Okay. Thank you. Would your experience in study after 2008 have -- including through your PhD thesis and degree, would that have informed you on what a person of skill in the art would have known and understood in the 2008, 2009 time frame?

MR. NIGHTINGALE: Objection. Leading.

BY THE WITNESS:

A. It would because as I mentioned before, with reduced measurement times there is a compromise on measurement accuracy, right? And part of my PhD was precisely to move forward the body of knowledge and

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scientific knowledge to balance this trade off, and therefore, the claim of combining Jones with Xu to make a faster measurement system by removing -- by the permutation of calculations that Dr. Kim does wouldn't have made that obvious at the time, and wouldn't have neither enabled being able to measure multiple wells, more than two, all of them in the system in a repeated fashion in the millisecond time resolution.

Q. And does that subsequent study and informing yourself help you understand what a person of skill in the art would have known and understood in the 2008, 2009 time frame?

A. Absolutely.

MR. NIGHTINGALE: Objection. Leading.

BY THE WITNESS:

A. Absolutely.

Q. And the last topic is, you had a discussion with Mr. Nightingale about the 300 millisecond versus 500 millisecond definitions in your declaration. These are in paragraphs 28 to 33.

Do you recall that discussion?

A. I do.

Q. And I think you were asked about why you chose to use 500 milliseconds instead of 300 milliseconds.

Do you recall that question or that

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discussion?

A. Yes.

Q. In paragraph 33 you provide some discussion in that regard. Can you look at that and see if that discussion is still correct?

A. Hang on one second. I need to read it.

MR. NIGHTINGALE: Objection. Leading.

(Witness perusing document.)

BY THE WITNESS:

A. Yes, it is still correct.

Q. And can you explain that a little further for us?

A. Yeah. As I stated here, the millisecond time resolution is the ability of the invention to be able to perform repeated consecutive impedance measurements for each and every well in the apparatus or system, and, you know, as I wrote here -- one second. Yeah.

Q. I want to focus your attention on paragraph 33, in particular, where you discuss 300 versus 500. And can you explain what you mean there?

A. There is a difference between measuring 300 and 500 milliseconds, but as I said, it is irrelevant because to what I believe is the dispute because they are both in the millisecond time resolution, and in my statement I adopted the 500 milliseconds from one

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another.

Q. And why did you adopt that 500 as opposed to the 300 in the expressed definition?

A. Because, you know -- well, I am reading verbatim what I wrote. As the Board noted, right, there were expressly defined millisecond time resolution in some instances with less than 300 milliseconds, and in others that are now disclaiming, nine and ten, less than 500 milliseconds, right? And that is in the millisecond time resolution, where as in the case of Jones, it is a 1.5 second update period.

Q. So has your opinion changed in that regard from what is stated there?

A. No. It is the same that I stated.

MR. BABCOCK: Okay. Those are the only questions I had for you, Dr. Sanchez. Again, thanks for your time. Josh may have a few final questions.

MR. NIGHTINGALE: Nothing more from me.

MR. BABCOCK: Okay. I think we are done for the day.

THE COURT REPORTER: Can I just ask signature, are you reserving?

MR. NIGHTINGALE: I just wanted to ask you about turn around, rough transcript.

THE COURT REPORTER: A rough I can get to you guys

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this evening and then regular delivery is ten business days.

MR. NIGHTINGALE: I would like to get it expedited, some time next week. Next Friday would be fine.

THE COURT REPORTER: And then Mr. Babcock, would you like the same delivery?

MR. BABCOCK: No. Regular is fine for us.

THE COURT REPORTER: Would you like a rough?

MR. BABCOCK: Yeah, we'll take a rough.

(Deposition concluded at 1:30 p.m.)

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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

AXION BIOSYSTEMS, INC.,
Petitioner,
vs.
AGILENT TECHNOLOGIES, INC.,
Patent Owner.
Case No. IPR2024-01467
Patent 11,906,508

I, BENJAMIN SANCHEZ TERRONES, Ph.D, state that I have read the foregoing transcript of the testimony given by me at my deposition on the 8th day of August, 2025, and that said transcript constitutes a true and correct record of the testimony given by me at the said deposition except as I have so indicated on the errata sheets provided herein.

_____
BENJAMIN SANCHEZ TERRONES, Ph.D

No corrections (Please initial)_____
Number of errata sheets submitted_____(pgs.)

SUBSCRIBED AND SWORN to
before me this _____ day
of _____, 2025.

_____
NOTARY PUBLIC

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STATE OF ILLINOIS)
) SS:
COUNTY OF C O O K)

I, Sharon A. Jerndt, Certified Shorthand Reporter and Registered Professional Reporter, do hereby certify that on the 15th day of August, 2025, the deposition of the witness, BENJAMIN SANCHEZ TERRONES, Ph.D, called by the Petitioner, was taken before me, reported stenographically, and was thereafter reduced to typewriting under my direction.

The said deposition was taken at Lexitas Chicago, 180 North LaSalle Street, Suite 2800, Chicago, Illinois, and there were present counsel as previously set forth.

The witness, BENJAMIN SANCHEZ TERRONES, Ph.D, was first duly sworn to tell the truth, the whole truth, and nothing but the truth, and was then examined upon oral interrogatories.

I further certify that the foregoing is a true, accurate, and complete record of the questions asked of and answers made by the said witness, BENJAMIN SANCHEZ TERRONES, Ph.D, at the time and place hereinabove referred to.

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The signature of the witness, BENJAMIN SANCHEZ TERRONES, Ph.D, was reserved by agreement of counsel and the deponent.

The undersigned is not interested in the within case, nor of kin or counsel to any of the parties.

Witness my official signature on this 15th day of August, 2025.

Sharon A. Jerndt

SHARON A. JERNDT, CSR, RPR
180 North LaSalle Street
Suite 2800
Chicago, Illinois 60601
Phone: (312) 236-6936

CSR No. 084-004044

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ERRATA SHEET FOR: BENJAMIN SANCHEZ TERRONES

BENJAMIN SANCHEZ TERRONES, being duly sworn, deposes and says: I have reviewed the transcript of my proceeding taken on 08/08/2025. The following changes are necessary to correct my testimony.

PAGE	LINE	CHANGE	REASON

Witness Signature:_____

Subscribed and sworn to, before me this ___ day of _____, 20 ___.

_____ (NOTARY PUBLIC)

_____ MY COMMISSION EXPIRES

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ERRATA SHEET

Case Name: *Axion Biosystems, Inc. v. Agilent Technologies, Inc.*

Case No.: IPR2024-01467

Witness Name: Benjamin Sanchez Terrones, Ph.D.

Deposition Date: August 8, 2025

Page	Line(s)	Change	Reason
6	6	change “11,906508” to “11,906,508”	Transcription error
8	2	change “Lois” to “Loeb”	Transcription error
9	15	change “Dr. King’s” to “Dr. Kim’s”	Transcription error
32	12	change “Lois” to “Loeb”	Transcription error
41	8	change “Lloyd” to “Loeb”	Transcription error
41	14	change “Lloyd” to “Loeb”	Transcription error
83	5	change “cartiology” to “car analogy”	Transcription error
83	5	change “cart” to “car”	Transcription error

I, the undersigned, do hereby certify that I have read and examined the foregoing transcript, and the same is a true, correct and complete transcription of the testimony given by me with the exception of the corrections listed above.

Date: August 26, 2025

Benjamin Sanchez Terrones, Ph.D.