1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3 - x

4 NEURENT MEDICAL INC. & NEURENT MEDICAL LTD.

5 Petitioners,

6 v.

7 THE FOUNDRY, LLC,

8 Patent Owner.

9 - x

10 Case No. IPR2024-00669

11 U.S. Patent No. 11,679,077

12 - x

13

14 Deposition of MAROM BIKSON, Ph.D.

15 New York, New York

16 Tuesday, January 7, 2025

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20 Pages: 1 - 261

21 Reported By: Anita M. Trombetta, RMR, CRR,

22 California CSR No. 14647

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3 Deposition of MAROM BIKSON, Ph.D., held at the
4 offices of:
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14 Before Anita M. Trombetta, a Certified Shorthand
15 Reporter in the State of California, RMR, CRR, and
16 Notary Public in and for the State of New York.
17
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21
22

1 A P P E A R A N C E S
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1 ----------I N D E X----------
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5 Attorney Briggs 229
6 Attorney Cohen 243
7
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20 Application Publication Number
21 U.S. 2010 0217356
22

1 P R O C E E D I N G S
2 M A R O M B I K S O N, Ph.D.,
3 called as a witness, having been duly
4 sworn by a Notary Public, was examined and
5 testified as follows:
6 EXAMINATION BY
7 ATTORNEY COHEN:
8 Q Good morning.
9 A Good morning.
10 Q What is your full name?
11 A Marom Bikson.
12 Q And where do you live?
13 A I live in the 75 Green, Apartment 3B, in
14 Brooklyn, New York.
15 Q And you understand that the oath you just
16 took is the same oath you would be required to
17 take if you were testifying in the United States
18 court?
19 A I understand.
20 Q Is there any reason you cannot provide
21 accurate and truthful testimony today?
22 A No.

1 Q I'm going to go through a few ground rules
2 for today before we get started. So first we have
3 a transcript and a court reporter. So please give
4 audible answers instead of shaking your head or
5 nodding.
6 Please let me finish my questions before
7 you answer so the court reporter can create a
8 clear transcript.
9 I will take breaks throughout the day. If
10 you ever need a break, let me know, and we'll take
11 one whenever is possible.
12 We can't take a break with a question
13 pending though. So I would ask you to answer my
14 question before we take a break.
15 After we take breaks, I may ask if you've
16 had conversation with your counsel about the
17 substance of your testimony today. Okay?
18 A Okay.
19 Q Have you ever been deposed before?
20 A I have.
21 Q How many times?
22 A I don't remember the exact number of

1 times.
2 Q Is it more than five?
3 A I think it's about five.
4 Q What are the cases? What's the subject
5 matter in the cases where you've been deposed?
6 ATTORNEY BRIGGS: Objection. Form.
7 A There -- there were varied cases. One of
8 them was also about intellectual property.
9 Q So just one case involving intellectual
10 property?
11 A As far as -- as far as depositions?
12 Q Yes.
13 A I don't remember.
14 Q What do you recall about that case? What
15 was the subject matter in that one case?
16 ATTORNEY BRIGGS: Objection. Form.
17 A So the -- the case I was previously
18 deposed on that related to intellectual property
19 had to do with the application of energy to the
20 body, including for aesthetic purposes.
21 Q And was that related to the ITC case?
22 A That is correct.

1 Q And is there any other case related to
2 intellectual property where you have been deposed,
3 that you recall?
4 A I don't recall.
5 Q For the cases not related to intellectual
6 property, what was the subject matter in those
7 cases where you were deposed?
8 A One of the cases related to potential
9 personal injury related to exposure or proximity
10 to a substation utility company.
11 Q And you said that there -- you recalled
12 about five depositions. So we've got one in the
13 ITC case, one that was a personal injury case
14 about exposure from a substation.
15 What are the other cases about?
16 A There was a case where -- which was
17 related, as I recall, related to patent invention.
18 It wasn't an IP dispute like this matter. It more
19 involved two parties and questions about who --
20 who owned or who had rights to the invention.
21 Q Were you an expert witness in that case or
22 a fact witness?

1 A I don't remember.
2 Q Did you have personal knowledge about the
3 facts in that case?
4 A No.
5 Q Okay.
6 A I had knowledge in my professional
7 capacity.
8 Q What was that knowledge?
9 A This was also related to devices that
10 applied energy to the body for therapeutic
11 purposes. So that's my professional field.
12 Q And what were you asked to evaluate there?
13 A It was a while ago, but as I remember it,
14 there was a question of an inventor who -- and
15 there were certain patents, and there was a
16 question about the time frame in which the
17 inventions were -- were made or conceived.
18 Q And so were you asked to give an overview
19 of the field at the time the inventions were made?
20 A I don't remember that.
21 Q Okay. Well, I guess what I'm trying to
22 understand is you said there was a question about

1 the time frame in which the inventions were made
2 or conceived, and what was that question?
3 A As best as I recall -- it was a while ago.
4 As best as I recall, there was a -- there was a
5 patent. And the patent was used for one
6 indication and then another indication. And
7 again, as best as I can recall, there was a
8 question about whether -- when it was invented for
9 the first indication, did that also apply to the
10 second indication or were these separate
11 inventions, but, again, this was a while ago,
12 which is why I don't remember the specifics.
13 Q Okay. So you got the ITC case, personal
14 injury, the patent invention dispute.
15 What other -- what was the subject matter
16 of the other depositions?
17 A I don't remember.
18 Q Okay. Do you know when those took place?
19 A Those would be several years ago, more
20 than several years ago.
21 Q Like more than ten years ago?
22 A I believe it would be more than five years

1 ago. I'm not sure about ten -- whether they were
2 before or after ten years ago.
3 Q When was the last time you were deposed?
4 A The last time I remember being deposed was
5 in that ITC case, which was during COVID, it was
6 through Zoom.
7 Q So sometime in 2020, 2021?
8 A I don't remember -- I don't remember the
9 exact date, but it was -- I'm -- I believe it was
10 during COVID. So it was absolutely restricted to
11 Zoom.
12 Q What did you do to prepare for today's
13 deposition?
14 ATTORNEY BRIGGS: Objection. The witness
15 is cautioned to not reveal any attorney-client
16 privileged information.
17 You may answer.
18 A I reviewed the depositions that I
19 prepared, and the materials that I relied on.
20 Q Did you meet with counsel?
21 A I did.
22 Q When did you meet with counsel?

1 A I met with counsel yesterday.
2 Q And how long did you meet with counsel?
3 A About eight hours.
4 Q Before yesterday, did you have any other
5 meetings with counsel to prepare for your
6 deposition?
7 A I think so.
8 Q About how many meetings do you recall?
9 A Specifically to prepare for the
10 deposition, I recall one meeting. It was by Zoom.
11 Q And how long was that meeting?
12 A I don't remember exactly. I want to say
13 about an hour.
14 Q Did you meet with anyone other than Heath
15 Briggs and Elana Araj to prepare for your
16 deposition?
17 A Yes.
18 Q Who else?
19 A There was an additional lawyer, his first
20 name is Ben.
21 Q Ben Gifford?
22 A You know, I'm sorry, I don't remember his

1 last name.
2 Q That's fine.
3 A Okay.
4 Q Did you meet with any other counsel?
5 A In preparation for --
6 Q For the deposition.
7 A -- the deposition.
8 No.
9 Q Did you speak with anyone other than
10 counsel to prepare for the deposition?
11 A I didn't speak to anyone other than
12 counsel to prepare for the deposition.
13 Q Okay. When were you first retained to
14 work on this matter?
15 A I don't remember the date.
16 Q Do you remember a time frame?
17 A It was several months ago. I can't be
18 more specific.
19 Q Was it during 2024?
20 A I'm not -- I'm not certain.
21 Q It could have been in 2024 or 2023?
22 A Again, I don't remember exactly, which is

1 why I don't want to answer, but I would certainly
2 have records of it.
3 Q Who first reached out to you?
4 A For my -- expertise here?
5 Q Sorry. Let me rephrase that.
6 Who first reached out to you to work on
7 this matter?
8 A The -- the work I'm doing on this matter
9 is through an expert consulting firm that's
10 actually based, I believe, in Boston. And so the
11 way it works is that they reach out to me and they
12 asked me whether I have relevant expertise on the
13 matter and they tell me who the parties are and
14 ask me if I have any conflicts. So that's how I
15 believe it started with this matter as well.
16 Q And what's the name of that expert
17 consulting firm?
18 A I don't remember.
19 Q Have you worked with them before?
20 A Yes.
21 Q How many times have you worked with them?
22 A I'm sorry. I do remember their name.

1 Q Oh, okay. Let's go back to them.
2 A I believe it's Rubin Anders.
3 Q Okay. Okay. So Rubin Anders is the name
4 of the expert consulting firm that you worked with
5 to get retained for this matter?
6 A I believe so.
7 Q And how many times have you worked with
8 Rubin Anders before?
9 A I'm not sure the exact amount, but it -- a
10 handful.
11 Q When did you start working with Rubin
12 Anders?
13 A I don't remember.
14 Q Was it before COVID?
15 A I don't remember.
16 Q What is your standard hourly rate?
17 A It is $600 an hour.
18 Q So you are here in relation to the six
19 declarations that you have provided in six
20 different IPRs; is that correct?
21 A My understanding is that I'm -- I'm here
22 to be deposed and -- in relation to the six

1 reports that I prepared.
2 Q And you have six copies of those reports
3 in front of you? Or let me rephrase that. You
4 have a copy of each of the six reports in front of
5 you?
6 A I have a copy of each of the reports in
7 front of me.
8 Q Okay. So I think just to make sure we're
9 working from the same framework, you have three
10 declarations that you have provided that relate to
11 petitions filed against patents that are owned by
12 Aerin Medical, correct, and those are in
13 IPR2024-00277, IPR2024-00278, and IPR2024-00282;
14 is that correct?
15 A Yeah, I can confirm that I see those
16 numbers and the case number of the three documents
17 here.
18 Q Okay. At times I may refer to those three
19 IPRs as the Aerin IPRs, okay?
20 A Okay.
21 Q And you have also offered declarations in
22 three IPRs related to petitions filed against

1 patents owned by the Foundry LLC; is that correct?
2 And those IPRs are: IPR2024-00279, IPR2024-00280,
3 and IPR2024-00669; is that correct?
4 A Yes, I can confirm that I -- those are the
5 case numbers on the documents in front of me.
6 Q At times throughout today I may refer to
7 those three IPRs as the Foundry IPRs. Okay?
8 A Okay.
9 Q Do you know any of the inventors on the
10 patents being challenged across these six IPRs?
11 A I don't recall knowing any of the
12 inventors.
13 Q For the IPRs challenging the Foundry --
14 the Foundry patents, you state that you relied on
15 a conversation you had on October 23rd, 2024, with
16 patent owner's other expert Dr. Howard Levine who
17 is an expert in the treatment of the
18 nasopharyngeal passage using devices that apply
19 radiofrequency energy. And I have a few questions
20 about that conversation.
21 How long was that conversation?
22 A As I remember that conversation, it was

1 about an hour.
2 Q And what did you discuss?
3 A One of the things we discussed were my
4 analysis that went into my preparation of these
5 reports.
6 Q Did you discuss anything else?
7 A Yeah.
8 Q What else did you discuss?
9 A There were some things we discussed that
10 were not related, for example, to the case.
11 Q What were those items?
12 A He has a practice in Cleveland and I went
13 to school in Cleveland. So we talked a little bit
14 about that.
15 Q About your shared history in Cleveland?
16 A Yes.
17 Q Did you ask him any questions during that
18 conversation?
19 A I don't remember if I asked him specific
20 questions, but I did want to understand whether he
21 concurred with my analysis.
22 Q So did he mostly ask you questions during

1 that conversation?
2 A I don't remember.
3 Q Did you review a copy of his declaration
4 before the conversation you had?
5 A No.
6 Q Have you reviewed a copy of his
7 declaration --
8 A Yes.
9 Q -- since that conversation?
10 A I -- I reviewed a copy of his declaration
11 since the conversation -- after the conversation.
12 Q Okay. Did you review a copy of his
13 declaration in preparation for today's deposition?
14 A Yes.
15 Q Do you know if he reviewed a copy of your
16 declaration before that call?
17 A I don't think so.
18 Q Had you met Dr. Levine before that
19 conversation?
20 A No.
21 Q Now, you have a Ph.D. in biomedical
22 engineering; is that correct?

1 A Correct.
2 Q And you do not have an MD; is that
3 correct?
4 A I do not have an MD.
5 Q Before this case, had you heard of
6 rhinitis?
7 A I think so.
8 Q When do you first recall hearing about
9 rhinitis? And in what context?
10 ATTORNEY BRIGGS: Objection. Form.
11 A I don't remember.
12 Q Have you -- did you ever study rhinitis
13 before this case?
14 ATTORNEY BRIGGS: Objection. Form.
15 A I don't remember. I don't remember.
16 Q Before working on this case, did you ever
17 evaluate methods for treating rhinitis?
18 A I studied technology that is used for the
19 treatment.
20 Q What technology was that?
21 A One of the areas that I work in is
22 technology that delivers energy into the body.

1 Q Did you ever study, prior to working on
2 this case, delivering energy into the body for the
3 treatment of rhinitis?
4 A Prior to working on this case, the work I
5 did on delivering energy into the body is broadly
6 relevant for applying energy to different regions
7 of the body.
8 Q Right. And my question is specific to
9 rhinitis. Before working on this case, did you
10 ever study delivering energy into the body to
11 treat rhinitis?
12 A Prior to working on this case, I worked on
13 technology that is broadly relevant for
14 application of energy to treat diseases. I don't
15 remember if I specifically discussed treatment of
16 rhinitis in those -- in the documents I prepared.
17 Q Sorry. What documents are you referring
18 to?
19 A Sorry, I was not clear. I meant to say
20 papers or things of that nature.
21 Q To the best of your recollection, have you
22 ever published on treating rhinitis?

1 A I have not published papers specifically
2 related to or focused on the treatment of
3 rhinitis.
4 Q Have you ever worked any studies focused
5 on the treatment of rhinitis?
6 A As I mentioned, I study the effects of
7 medical devices that apply energy in general. I
8 don't recall if any of those papers were specific
9 studies focused on the treatment of rhinitis.
10 Q To best of your recollection, none of
11 those papers were focused on the treatment of
12 rhinitis; is that correct?
13 ATTORNEY BRIGGS: Objection. Form.
14 A Could you just restate the question,
15 please?
16 Q Sure. To the best of your recollection,
17 none of the papers or studies that you have
18 performed were related to the treatment of
19 rhinitis; is that correct?
20 A No. What I was saying was I don't
21 remember if the papers were specifically focused
22 on the treatment of rhinitis.

1 Q Do you recall any papers that you have
2 published that have focused on the treatment of
3 rhinitis?
4 A No.
5 Q Have you ever worked on a medical device
6 intended to treat rhinitis?
7 A I've worked on medical devices with
8 technology that's relevant to treat rhinitis.
9 Q Have you ever worked on a device that is
10 intended to treat rhinitis?
11 A Can you clarify what you mean?
12 Q Sure. So you are familiar with medical
13 devices, correct?
14 A Yes.
15 Q And you understand that medical devices
16 have different intended uses, correct?
17 A Yes.
18 Q Have you ever worked or developed a device
19 that is intended to be used to treat rhinitis?
20 A I never specifically worked on a device
21 with a medical indication to treat rhinitis, but I
22 worked on the technology that underlies those

1 systems.
2 Q And when you say "the technology that
3 underlies those systems," what are you referring
4 to?
5 A These systems can use energy that is
6 directed into the body in a very controlled way.
7 And that is one of the areas that I study in my
8 capacity as a professor at the City College of
9 New York.
10 Q Okay. You study the delivery of energy
11 into the body; is that correct?
12 A Yes, that's one of the things I focus on.
13 Q You have never treated a patient for
14 rhinitis; is that correct?
15 A Correct.
16 Q And you have never delivered
17 radiofrequency energy to a patient, correct?
18 A Correct.
19 Q You have never delivered energy to a
20 patient to ablate tissue in the patient's body,
21 correct?
22 A Correct.

1 Q Prior to working on this case, were you
2 aware of the mechanisms for mucous production
3 inside the nose?
4 A Can you clarify what you mean?
5 Q Sure. So have you heard of goblet cells
6 in relation to your work on this case?
7 ATTORNEY BRIGGS: Objection. Form.
8 A I'm sorry, can you repeat the question?
9 Q Let me just rephrase it.
10 Do you know what goblet cells are?
11 A No.
12 Q Do you know about the parasympathetic
13 nerve structures inside the nasal cavity?
14 A I'm not an expert on the parasympathetic
15 nerve structure inside the nasal cavity.
16 Q Have you heard of turbinates before
17 working on this case?
18 A Yes.
19 Q In what context have you heard of
20 turbinates?
21 A I don't recall the exact context.
22 Q Do you recall when you first heard about

1 turbinates?
2 A I don't. I've been learning and taking
3 classes about anatomy and physiology since I was,
4 you know, in my late teens. So that's -- I don't
5 remember exactly when I might have first heard
6 about turbinates.
7 Q Had you ever studied or evaluated
8 turbinates before working on this case? Let me
9 strike that.
10 Have you ever done any work outside of the
11 anatomy and physiology courses involving the
12 analysis of turbinates?
13 A I'm not sure.
14 Q When was the last anatomy class that you
15 recall taking? Or let me strike that.
16 When did you complete the last anatomy
17 class that you recall taking?
18 A It's been a while since I took classes.
19 The last classes I took would have been completed
20 before 2000.
21 Q Did you ever take a course focused solely
22 on nasal anatomy?

1 A No.
2 Q Have you ever imaged a human head for the
3 purpose of imaging the nasal cavity?
4 ATTORNEY BRIGGS: Objection. Form.
5 A Can you clarify the question?
6 Q So in your declaration, you say, "I have
7 extensive experience in human head imaging, which
8 includes imaging of the nasal cavity."
9 So my question is: Have you ever imaged a
10 human head for the purpose of creating an image of
11 the nasal cavity?
12 A Yes.
13 Q When was that?
14 A It wasn't just once, if that's your
15 question, and it would be multiple times.
16 Q Was it for the purpose of treating a
17 condition inside the nasal cavity?
18 A It could be used for that purpose, yes.
19 Q What sort of imaging do you perform?
20 ATTORNEY BRIGGS: Objection. Form.
21 A Could you clarify the question?
22 Q Sure. I guess to start with, do you

1 perform imaging on patients?
2 A So usually when the imaging on patients is
3 done, it would be done at a facility. I -- I
4 could be overseeing the collection of scans, but
5 there usually would be other people there as well
6 supporting the -- the collection of the images.
7 Q Have you ever overseen the collection of
8 scans of a person's nasal cavity for the purpose
9 of treating a condition inside the nasal cavity?
10 A The scans I've collected can be used for
11 that purpose, yes.
12 Q Do you know if any of the scans you have
13 collected were you ever used for the purpose of
14 treating a condition inside the nasal cavity?
15 A You're asking me if the scans themselves
16 were used for treatment? The way it would work is
17 I would be collecting the scans and then those
18 scans would be used for the purpose of device
19 design, device optimization. And then once those
20 devices have been optimized, then they could be
21 used. And so just in that sense, you know, the
22 way you phrased it, you know, if the images were

1 used for treatment, I would just qualify it that
2 that would be the conventional pipeline for how I
3 would be using imaging.
4 Q Okay. Is you -- you collect a scan for
5 device design, but you are not scanning people for
6 evaluating treatment options?
7 ATTORNEY BRIGGS: Objection. Form.
8 A So again, when you say "I scan," usually I
9 would be part of a team that is conducting the
10 scans. And I have been involved in projects where
11 people were being imaged as part of a process to
12 evaluate treatment options.
13 Q Treatment options for a nasal condition?
14 A Just so I understand, can you just repeat
15 the full question?
16 Q Sure. So when you've been involved in a
17 team that's conducting a scan on a patient, have
18 any of those patients been imaged as part of a
19 process to evaluate treatment options for a nasal
20 condition like chronic rhinitis?
21 A The scans that we collect can be used for
22 the design of different medical devices including

1 those that apply energy to the nose. I don't
2 recall that we were being involved in a project
3 where patients were being scanned with a special
4 focus on treating diseases related to applying
5 energy to the nose.
6 Q Have you ever worked on a device that
7 delivers energy to the nasal cavity?
8 A Yes.
9 Q What device is that?
10 A There are devices that are used for
11 electrical stimulation inside the nose. I've
12 worked on those devices.
13 Q And what are those devices?
14 ATTORNEY BRIGGS: Objection. Form.
15 A Can you clarify the question?
16 Q Well, you said, "There are devices that
17 are used for electrical stimulation inside the
18 nose. I've worked on those devices."
19 And so my question is: When you refer to
20 those devices, what are you referring to?
21 A Devices that are designed and used
22 specifically for the purpose of applying energy

1 inside the nose.
2 Q Do these devices have a name?
3 A I can't think of a generic name that would
4 cover all these devices.
5 Q What type of energy -- let me strike that.
6 What type of electrical stimulation is
7 being applied by these devices?
8 A So this would be -- in cases, examples
9 would include devices where a -- one or more
10 electrodes are inserted inside the nasal cavity.
11 Those electrodes would be connected by a wire to a
12 stimulator that is programmed and designed to
13 deliver a prescribed amount of energy. That
14 energy is then delivered to those electrodes and
15 it enters the body.
16 Q What are those devices used -- strike
17 that.
18 What type of conditions are those devices
19 used to treat?
20 A Those devices can be used to treat
21 neurological and psychiatric disorders.
22 Q Where are they positioned inside the nasal

1 cavity?
2 ATTORNEY BRIGGS: Objection to form.
3 A Can you clarify that question?
4 Q Do you know what the nasal cavity is?
5 A Yes.
6 Q And do you understand it to be kind of the
7 anatomical structure that's inside your nose?
8 A That is my general understanding.
9 Q Okay. And the devices that you are
10 talking about, do you know where they are applying
11 energy inside the nasal cavity?
12 A I don't remember.
13 Q Do you know if they are applying energy
14 inside the nasal cavity?
15 A Some of them are applying energy inside
16 the nasal cavity.
17 Q Okay. But you do not know where they are
18 applying energy inside the nasal cavity?
19 A I -- sitting here right now, I don't
20 remember for specific devices where they position
21 their electrodes inside the nasal cavity.
22 Q But you know they are positioned inside

1 the nasal cavity?
2 A Yes.
3 Q Do you work with companies on these
4 devices?
5 ATTORNEY BRIGGS: Objection to form.
6 A Can you clarify the question?
7 Q Sure. Are you -- are there any companies
8 that you consult with that are developing or using
9 these devices?
10 A Which devices?
11 Q These devices we've been talking about
12 that apply energy inside the nasal cavity?
13 A If the question is if I consult directly
14 for companies that use devices that apply energy
15 into the nasal cavity, I do not consult for any
16 company that does that.
17 Q Are these devices used to apply energy
18 elsewhere in the body?
19 ATTORNEY BRIGGS: Objection. Form.
20 A Which devices?
21 Q The devices we've been talking about that
22 you -- that you say you've worked on that deliver

1 energy inside the nasal cavity? Do you have that
2 in mind?
3 A Yes, I understand.
4 Q Okay. Are those devices used to apply
5 energy elsewhere in the body?
6 A I think it would depend on the device.
7 Q Okay. Let's take a step back. We've been
8 talking about devices that you say you've worked
9 on that apply energy inside the nasal cavity,
10 correct?
11 A Correct.
12 Q What kind of energy is being applied?
13 A These devices, the ones I was referring
14 to, some of them would apply electrical energy.
15 Q What other types of energy do they apply?
16 A I don't remember if there were other types
17 of energy.
18 Q When -- do you have some name that you
19 give these devices?
20 A I don't have a name that I would broadly
21 use to describe all these devices.
22 Q If you were working with a colleague and

1 you said, hey, I'm going to work on this project
2 related to this device that's going to apply
3 energy to the nasal cavity, what would you call
4 that device?
5 ATTORNEY BRIGGS: Objection. Form.
6 A I don't think I understand the question.
7 Q Okay. When you say "all these devices,"
8 what are you referring to?
9 A I just want to be careful here because
10 I'm -- I know we've been having this conversation,
11 I'm not exactly sure which --
12 Q Sure.
13 A -- thing to refer to here.
14 Q Let me take a step back. I'm still on
15 these devices that you say you've worked on that
16 apply electrical energy inside the nasal cavity.
17 So to start with, you don't know where they apply
18 energy inside the nasal cavity; is that correct?
19 A I don't recall for specific devices where
20 the electrodes are positioned inside the nasal
21 cavity.
22 Q Do you know the electrode design for these

1 devices that are positioned inside the nasal
2 cavity?
3 A I don't remember -- specifically for what
4 you're asking me, I don't remember the -- the
5 electrode design used in these devices.
6 Q Do you recall how many electrodes are used
7 in these devices?
8 A I don't recall how many electrodes were
9 used in these devices.
10 Q And you said these devices are intended to
11 treat, I think you said, neurological and
12 psychological issues; is that correct?
13 A Correct.
14 Q And you said these devices deliver
15 electrical energy?
16 A Correct.
17 Q What type of electrical energy?
18 A Can you clarify what you mean by that?
19 Q Sure. Is there a particular frequency
20 range of energy that these devices are intended to
21 apply?
22 A I don't remember the frequency range used

1 by each one of these devices.
2 Q Are these devices intended to ablate
3 tissue?
4 A Like which devices?
5 Q These devices you've been talking about
6 that are, as you've stated, used to apply
7 electrical energy inside the nasal cavity.
8 Are any of them intended to ablate tissue?
9 A I'm just a little bit unsure about the
10 scope of your question. I'm not sure which
11 devices.
12 Q I think I'm having a hard time --
13 A Okay.
14 Q -- figuring out what devices you're
15 talking about, because we've been talking about
16 devices that apply energy inside the nasal cavity,
17 right?
18 A Yes.
19 Q Okay. So do you know the names of any
20 companies that make these devices?
21 A Which devices?
22 Q The devices that you've been talking about

1 that you say apply -- okay. Let me take a step
2 back.
3 You say you've worked on devices that
4 apply electrical energy to the nasal cavity,
5 correct?
6 A Yes.
7 Q How many different types of devices does
8 that refer to?
9 A I don't remember.
10 Q And do these devices have a name?
11 A I don't know what general name I would use
12 to describe all of them.
13 Q Are they stimulators?
14 A They apply electrical energy into the
15 body.
16 Q Would you refer to them as stimulators?
17 A You could refer to some of them as
18 stimulators.
19 Q For the ones that you would not refer to
20 them as stimulators, what would you call them?
21 A I'm not sure.
22 Q When did you work on these devices?

1 A Again, when you're saying "these devices,"
2 I just want -- I just want to answer your
3 questions very precisely. So can you just clarify
4 what you mean?
5 Q I'm referring to the devices that you've
6 been talking about that you say deliver electrical
7 energy inside the nasal cavity?
8 A So I've been working on these device --
9 studying these types of devices for a long period
10 of time.
11 Q Have you ever studied -- have you yourself
12 ever studied these devices applying electrical
13 energy to the nasal cavity?
14 A I have studied these devices.
15 Q My question is a little bit more focused.
16 Have you ever evaluated the effects of these
17 devices applying energy to the nasal cavity?
18 A Yes.
19 Q When was that?
20 A This was over, again, a broad period of
21 time.
22 Q Have you ever -- sorry. Let's just take a

1 step back.
2 Do you understand what I mean when I say
3 ablate tissue?
4 A I believe I do.
5 Q And do you understand ablation to refer to
6 the destruction of tissue?
7 A Ablation can refer to the destruction of
8 tissue.
9 Q Does ablation refer to anything else in
10 your view?
11 A I believe that ablation generally refers
12 to the destruction of tissue.
13 Q Okay. Have you worked on a device that is
14 intended to ablate tissue?
15 A I've worked on technology that is used in
16 devices that ablate tissue.
17 Q Have you worked on a device that is
18 intended to ablate tissue?
19 A Can you clarify the question?
20 Q Sure. So you said I've worked on
21 technology that is used in devices that ablate
22 tissue. I assume that technology involves the

1 delivery of energy to the body.
2 My question is: Have you ever worked on a
3 device that is intended to ablate tissue in the
4 body, that is its outcome, that it is going to
5 ablate tissue in the body?
6 A I've worked on technology that is
7 supporting of that. I don't recall if I worked on
8 technology or when I worked on technology with a
9 medical indication associated with it --
10 Q Okay.
11 A -- for a patient.
12 Q Sitting here today, you do not recall
13 working on a device where the indication for use
14 is to ablate tissue; is that correct?
15 A I don't recall.
16 Q Okay. So sitting here today, you do not
17 recall working on a device where the indication
18 for use is to ablate tissue, correct?
19 A Just because I've been working on these
20 technologies for many decades, and I've worked
21 with a large number of companies on a variety of
22 different products. So just there has been so

1 much work and that's why I want to be very careful
2 in answering question that I don't recall -- I
3 can't recall to you a specific instance where the
4 label was ablation.
5 Q Can you recall a specific instance on
6 working on a device that delivers radiofrequency
7 energy to the body intended to ablate tissue?
8 A For the same reason I responded to you
9 before, I do not recall working on a device with
10 that medical label, though I worked on the
11 technology that is used in those devices.
12 Q And when you say you worked on the
13 technology that's used on those devices, are you
14 are referring to the application of electrical
15 energy to the body?
16 A Broadly speaking, that's what I'm
17 referring to, yes.
18 Q Do you have any publications evaluating
19 application of radiofrequency energy to the body?
20 A I have publications relevant to the
21 application of radiofrequency to the body, yes.
22 Q My question was more do you have any

1 publications where you have evaluated
2 application -- actual application of
3 radiofrequency energy to the body?
4 A Can you repeat the question?
5 Q Do you have any publications where you
6 have evaluated the application of radiofrequency
7 energy to the body?
8 A Yes.
9 Q Which publications are those that you
10 recall?
11 A I have publications that analyze the
12 effects of high frequency energy applied into the
13 body, and how that energy then results in the
14 elevation of tissue temperature, which is a
15 mechanism by which that energy would influence the
16 body.
17 Q Now, before we were talking about how you
18 have yourself never treated a patient for
19 rhinitis, correct?
20 A Correct.
21 Q And you do not know what steps a physician
22 would take before performing a treatment on a

1 nasal airway; is that correct?
2 ATTORNEY BRIGGS: Objection to form.
3 A Can you clarify the question?
4 Q Do you know what steps a physician would
5 perform before -- strike that.
6 Do you know what steps a physician would
7 take before performing a treatment on a nasal
8 airway?
9 A I'm not a doctor or -- or a specialist in
10 the performance of those treatments.
11 Q Okay. So my question was: Do you know
12 what steps a physician would take before
13 performing a treatment on a nasal airway?
14 A I think that question is very broad. I
15 have some understanding of the steps that would be
16 involved.
17 Q And where is that understanding from?
18 A An understanding of -- sorry.
19 Q What steps would be performed prior to
20 performing a treatment on the nasal airway?
21 A I would have that understanding from my
22 general education.

1 Q Here this case involves application of
2 radiofrequency energy inside the nasal cavity,
3 correct?
4 ATTORNEY BRIGGS: Objection. Form.
5 A Can you be specific about which matter
6 you're referring to?
7 Q Sure. So broadly, let's take a step back.
8 Are you aware that Aerin Medical sells a
9 device called the RhinAer device?
10 A I have not studied specific products sold
11 by Aerin Medical.
12 Q Are you familiar with devices that deliver
13 radiofrequency energy inside the nasal cavity?
14 A Yes.
15 Q Are you familiar with devices that deliver
16 radiofrequency inside the nasal cavity that are
17 intended to ablate tissue?
18 A What do you mean by familiar?
19 Q Do you know about devices that deliver
20 radiofrequency energy inside the nasal cavity that
21 are intended to ablate tissue?
22 A I know about devices that deliver energy

1 into the nasal cavity for ablating tissue.
2 Q Do you know what steps are taken by a
3 physician before they perform a procedure where
4 they deliver energy inside -- into the nasal
5 cavity for ablating tissue?
6 A Since I'm not a doctor, I don't think I
7 would have the same level of -- or the complete
8 level of familiarity that a physician would have.
9 I would understand some of those steps.
10 Q Okay. But you do not have the same level
11 of knowledge that a doctor would have as to what
12 steps are performed before delivering
13 radiofrequency energy into the nasal cavity for
14 ablation?
15 A There would be things that a doctor knows
16 that I do not know.
17 ATTORNEY BRIGGS: Counsel, just about an
18 hour. Do you want to -- if it's a good point.
19 ATTORNEY COHEN: Sure. We can take a
20 break.
21 ATTORNEY BRIGGS: Okay.
22 (Recess.)

1 BY ATTORNEY COHEN:
2 Q Now, before earlier we were talking about
3 devices that deliver energy into the body that are
4 intended to ablate tissue.
5 Do you recall that?
6 A Yes.
7 Q And you had testified that you have never
8 worked on a device that is -- that its indication
9 for use is to -- or let me strike that.
10 You do not recall having worked on a
11 device where the indication for use is to ablate
12 tissue.
13 Do you recall that?
14 A I think so.
15 Q You have never designed a generator that
16 is intended to deliver radiofrequency energy into
17 the body; is that correct?
18 ATTORNEY BRIGGS: Objection to form.
19 A I have worked on the design of generators
20 that are capable of delivering radiofrequency
21 energy into the body.
22 Q Have you worked on the design of

1 generators that are intended to deliver
2 radiofrequency energy into the body?
3 ATTORNEY BRIGGS: Objection to form.
4 A I have worked on the design of generators
5 that among their intentional purposes could be the
6 application of radiofrequency energy into the
7 body.
8 Q Are you aware if any of those generators
9 that you have worked on are used for the
10 application of radiofrequency energy into the
11 body?
12 A I'm not sure.
13 Q Have you ever designed a device that is
14 intended to cause irreversible electroporation?
15 ATTORNEY BRIGGS: Objection. Form.
16 A I have.
17 Q What device is that?
18 A One of the devices that my laboratory has
19 developed and worked on was a specialized device
20 for producing electroporation.
21 Q What was the name of the device?
22 A I don't think it had a name. It was a

1 device we developed in my lab.
2 Q Where was it intended to apply energy?
3 ATTORNEY BRIGGS: Objection to form.
4 A Could you clarify the question?
5 Q You said you worked on a specialized
6 device for producing electroporation, correct?
7 A Yes.
8 Q Okay. Where was it intended to produce
9 electroporation?
10 A The device by its design could be used
11 across different targets.
12 Q What targets was it designed to be used
13 in?
14 A I don't think the design of it was
15 specific to one target.
16 Q Okay. So was a device that could be used
17 across the body to produce electroporation in
18 various tissues?
19 A It could.
20 Q Was it intended to produce reversible
21 electroporation or irreversible electroporation?
22 A The device could be used for either

1 irreversible electroporation or for reversible
2 electroporation.
3 Q And when you were developing it, were you
4 intending it to be used for irreversible or
5 reversible electroporation?
6 A As I recall, the device would be used for
7 the study of either reversible or irreversible
8 electroporation.
9 Q Did you study the device's use for
10 electroporation in the body?
11 ATTORNEY BRIGGS: Objection. Form.
12 A In my lab we focused on the design and the
13 build of the device and its performance
14 verification.
15 Q Okay. What was -- has that device been
16 commercialized?
17 A The specific device that I've sort of been
18 referring to here has not been commercialized.
19 Q Did you have a project name for it in your
20 lab?
21 A Not really.
22 Q Who worked on it?

1 A This would have been worked on by
2 technicians or graduate students in my lab.
3 Q Do you recall any specifically that worked
4 on this?
5 ATTORNEY BRIGGS: Objection. Form.
6 A You're asking me their names?
7 Yeah.
8 Q Who were they?
9 A One of the people who worked on it is
10 named Mohamad Fallahrad.
11 Q Do you recall any other names?
12 A I don't.
13 Q Was this device ever used on humans?
14 ATTORNEY BRIGGS: Objection. Form.
15 A I don't think so.
16 Q Was this device intended to be used on
17 animals?
18 A Yes.
19 Q What type of animals?
20 A The design of the device allowed it to be
21 used on different kinds of animals.
22 Q Were there any animals that you had in

1 mind when designing the device?
2 A I don't recall.
3 Q Was this device used on rats?
4 A So the device that specifically you're
5 asking about here, when it was used in my own
6 laboratory, we didn't use it on animals. We just
7 used it up to the point of bench-top verification.
8 Q How did you perform bench-top verification
9 of this device that was developed in your lab?
10 A One way you can perform bench-top
11 verification is you would take the device, you
12 would program it according to some setting, and
13 then you connect it to a load. So essentially if
14 you have an output of the device and you have the
15 electrodes, you would put those electrodes across
16 a load or, alternatively, you would take the wires
17 themselves and put that across a load. So if
18 you're using the wires themselves, an example of a
19 load might be something as basic as a resister.
20 Then if you're using the electrodes themselves,
21 the load might be something like a phantom, which
22 is essentially -- could be something like a

1 conductive jelly, almost like Jello with an
2 electrolyte in it. It could even be a fruit.
3 And then the device is discharged across
4 the load and you measure the performance of the
5 device. And so you would be measuring things like
6 the voltage at the output of the device. You
7 would be measuring the current output coming out
8 of the device. You would be looking at things
9 like intensity, wave form, and you could also vary
10 the load to see how the device performance would
11 vary depending on the load. All the tests I've
12 described to you don't require using an animal.
13 Q Do you know if the device that you
14 developed in your lab that is intended to evaluate
15 irreversible or reversible electroporation has
16 ever been used on an animal?
17 A My understanding is it has been used on an
18 animal.
19 Q What animal?
20 A I'm not sure.
21 Q Who used it on an animal?
22 A The device was used by a research team.

1 One site where that research team works is, I
2 believe, the University of Massachusetts at
3 Amherst.
4 Q And do you recall who on that research
5 team used the device?
6 A I recall the name of the PI, yes.
7 Q And who is that?
8 A It's a professor. His first name is
9 Govind. He has a rather long last name that I'm a
10 little bit worried that I -- I can't pronounce his
11 last name.
12 Q How do you spell his first name?
13 A G-O-V-I-N-D. That's his -- that's --
14 that's the -- maybe he has a more formal name he
15 uses.
16 Q Is his last name
17 S-R-I-M-A-T-H-V-E-E-R-A-V-A-L-L-I,
18 Srimathveeravalli?
19 A That sounds about right, yes.
20 Q Okay. And so his research team has used
21 this device that your lab developed on an animal?
22 A That is my understanding.

1 Q What is your understanding of the research
2 he was performing?
3 A I'm -- my understanding of it is -- I'm
4 just speaking here very generally -- is that he's
5 very interested in reversible and irreversible
6 electroporation. And he's interested in the
7 optimization of wave forms, stimulation wave forms
8 for that purpose.
9 Q And are the wave forms that are used for
10 reversible electroporation different from the wave
11 forms used for irreversible electroporation?
12 A Generally speaking, whether reversible
13 electroporation is produced or irreversible
14 electroporation is produced is going to depend on
15 a lot of things, but one of those things is going
16 to be the nature of the energy that the tissue is
17 exposed to.
18 And so by designing the energy to have
19 certain features, you could attempt to
20 preferentially produce either reversible
21 electroporation or irreversible electroporation.
22 Q Okay. And you said at the beginning of

1 that, whether reversible electroporation or
2 irreversible electroporation is produced is going
3 to depend on a lot of things.
4 What are some of the parameters that will
5 affect whether you produce reversible or
6 irreversible electroporation?
7 A Sure. So as I said, we can think of
8 parameters that -- I think you're asking really
9 the parameters related to stimulation, but in
10 addition to that there would be parameters related
11 to the anatomy and there would be parameters
12 related to the cell types as well.
13 So on the stimulation side, the
14 overarching -- one of the overarching parameters
15 you want to be aware of is something called dose,
16 which, you know, I've described in my
17 publications. The dose are those features of the
18 device that govern the delivery of energy into the
19 body and so those would include the size of the
20 electrodes, the placement of the electrodes, the
21 intensity provided, whether it was voltage or
22 current controlled -- the wave form, the pulse

1 pattern if you're using pulses, and so on.
2 So all of that would be something that is
3 controllable and is described as a stimulation
4 dose. And so it's within that space that you are
5 sort of designing and going back to what I was
6 saying before. One thing you could be designing
7 for is to try to distinguish between reversible --
8 to preferentially produce reversible versus
9 irreversible electroporation.
10 Q And when you say "preferentially produce
11 reversible versus irreversible electroporation,"
12 is that because you produce reversible or
13 irreversible electroporation when you're intending
14 to produce the other. So let me rephrase that.
15 For example, if you design the device that
16 is intended to preferentially produce reversible
17 electroporation, is there the risk that you will
18 also produce irreversible electroporation?
19 A Yes.
20 Q And when you are designing that device, at
21 most you can design a device that is preferably
22 trying to reversibly electroporate versus

1 irreversibly electroporate?
2 A Sorry, can you say that again?
3 Q Sure. If you are designing a device that
4 you would prefer produce reversible
5 electroporation, you cannot necessarily prevent
6 irreversible electroporation from occurring?
7 ATTORNEY BRIGGS: Objection. Form.
8 A It depends what you mean. I believe you
9 could design a device that under certain
10 situations could be expected to lead to a
11 irreversible electroporation and you could design
12 a device that under some -- you would expect could
13 lead to reversible electroporation. So I don't
14 think it's a matter -- it's not out of control.
15 It's something that can be designed for, if I
16 understood the question.
17 Q Okay. Okay. But it is a risk that if you
18 design a device that is intended to reversibly
19 electroporate, it could also irreversibly
20 electroporate?
21 ATTORNEY BRIGGS: Objection. Form.
22 A I think it would depend on the device.

1 Q And earlier you said whether a device will
2 irreversibly or reversibly electroporate can also
3 depend on the -- the cell type, for example.
4 Can you explain what you mean by that?
5 A The effects of energy, in general, on
6 cells in the body will depend on the specific
7 cells you are discussing. And so it's possible
8 that you would be applying, let's say, a specific
9 amount of energy, that you have cell type A and
10 cell type B. And the way cell type A is not the
11 way that cell type B will respond.
12 So in some situations, it's important to
13 be aware of the -- of the cell type. I don't want
14 to make the claim that it's always the case, but
15 in some cases cell types may -- may show different
16 responses to stimulation.
17 Q If you design a device that's intended to
18 preferentially cause reversible electroporation,
19 do you know how many cells would undergo
20 irreversible electroporation?
21 ATTORNEY BRIGGS: Objection to form.
22 A I think that would very much depend on the

1 device and the use case, to even start to answer
2 that question.
3 Q Okay. When did you develop this device?
4 ATTORNEY BRIGGS: Objection to form.
5 A The device --
6 Q Let me just -- I'll rephrase.
7 When did you develop the device we've been
8 discussing that's intended to evaluate reversible
9 or irreversible electroporation?
10 A So the device that we've sort of been
11 focusing on for the past few minutes, I don't
12 remember exactly, but generally I think we've been
13 working on that device over the past few years.
14 Q Do you know when the project began to
15 develop this device?
16 A I don't remember.
17 Q But --
18 A Sorry.
19 Q Go ahead.
20 A I would definitely say it was several
21 years ago.
22 Q Was it before COVID began in 2020? I like

1 to use that as a kind of clear divider.
2 ATTORNEY BRIGGS: Objection. Form.
3 A I don't recall exactly, but I believe that
4 we were working on this project before COVID.
5 Q Do you know when Govind at the University
6 of Massachusetts used the device to evaluate
7 electroporation in animals?
8 A So I can't speak precisely from memory to
9 when he used the device. I also want to clarify
10 that he also has a team, or had a team, at other
11 institutions as well. I believe he was at
12 Memorial Sloan-Kettering Cancer Center here in the
13 city. So the device might have been -- a device
14 might have been used there and a device might have
15 been used at UMass as well. And --
16 Q Oh --
17 A Sorry, go ahead.
18 Q My question is more just, do you know when
19 he -- strike that.
20 You know he evaluated and actually used
21 the device that your lab developed, correct?
22 A That is my understanding, yes.

1 Q Do you recall when he evaluated and used
2 the device that your lab developed?
3 A I don't recall the exact dates.
4 Q Was it in the last two years?
5 A I believe that as recently as the past two
6 years he has been using the device.
7 Q Why did you develop this device to
8 evaluate electroporation in cells?
9 ATTORNEY BRIGGS: Objection. Form.
10 A So the device that we were sort of talking
11 about before was developed, if I remember
12 correctly, the impetus for developing it largely
13 came through discussions with Govind and his
14 research interests.
15 Q And do you recall why he was interested in
16 this type of device?
17 A As I recall it, he was generally
18 interested in the ability to select between
19 reversible and irreversible electroporation.
20 I don't recall the precise area that he
21 was coming from, though he was at Memorial
22 Sloan-Kettering Cancer Center, and so it's

1 possible it was related to cancer treatment.
2 Q And to evaluate reversible and
3 irreversible electroporation, he wanted to have a
4 device so he could test out different energy
5 parameters on different cells to see what the
6 outcome would be?
7 ATTORNEY BRIGGS: Objection to form.
8 A Yes.
9 Q Have you ever designed a device that is
10 intended to deliver electroporation energy inside
11 the nasal cavity?
12 ATTORNEY BRIGGS: Objection. Form.
13 A I've developed technology that is relevant
14 for the delivery of electrical energy inside the
15 nasal cavity.
16 Q Right, and I think we talked about that
17 before, but my question is: Have you ever
18 designed a device that is intended to cause
19 electroporation to cells inside the nasal cavity?
20 ATTORNEY BRIGGS: Objection to form.
21 A I have not worked on a project where its
22 primary objective was to generate electroporation

1 to create a device, for example, whose primary
2 purpose was the generation of electroporation
3 inside the nasal cavity.
4 Q Have you ever designed a device that is
5 intended to ablate cells inside the nasal cavity
6 using radiofrequency energy?
7 A I haven't in my lab worked on a project to
8 design a device where its primary objective is to
9 ablate tissue inside the nasal cavity.
10 Q Have you ever designed a device that is
11 intended to ablate cells anywhere in the body
12 using radiofrequency energy?
13 ATTORNEY BRIGGS: Objection to form.
14 A The -- yes.
15 Q Where in the body?
16 A The device I designed wasn't specific to a
17 part of the body.
18 Q What was the device that you were
19 referring to now? Sorry, let me strike that.
20 So as I understand it, you were talking
21 about a device that was intended to ablate cells
22 in the body using radiofrequency energy; is that

1 correct?
2 A I guess I was talking about a device that
3 is capable of delivering energy that can be used
4 to ablate tissue in the body.
5 Q Okay. Have you ever designed a device
6 that is intended to deliver energy to ablate
7 tissue in the body?
8 A If you're using intended in the sense of,
9 you know, a medical label, then no.
10 Q Okay. I kind of want to go back to the
11 reversible versus irreversible electroporation we
12 were talking about before.
13 And you had said -- I asked you, when
14 you're trying to cause reversible electroporation,
15 do you know how many cells would possibly undergo
16 irreversible electroporation.
17 Do you recall that discussion?
18 A Yes.
19 Q What are some of the parameters you would
20 have to evaluate to understand whether reversible
21 or irreversible electroporation occurred?
22 A So whether you produce reversible or

1 irreversible electroporation will depend on
2 different factors, but a dominant factor would be
3 the nature of the energy that is applied to the
4 body and that therefore the cells are exposed to.
5 When you're looking at the parameters of
6 that energy, one parameter that would matter would
7 be the intensity of that energy. And that could
8 be described in terms of current density or
9 electric field at the target tissue, but certainly
10 there is a -- you would have to consider a range
11 of or a constellation of parameters in that
12 analysis, not just one parameter.
13 Q Would that constellation of parameters
14 include the amount of voltage applied?
15 ATTORNEY BRIGGS: Objection. Form.
16 A So if you're doing an analysis of whether
17 you're going to produce irreversible or reversible
18 electroporation from a -- from a device, one of
19 the parameters that may be important to consider
20 is the voltage produced by the device.
21 Q Would you also need to understand the
22 number of pulses that are delivered with a

1 particular application?
2 ATTORNEY BRIGGS: Objection. Form.
3 A If you're studying whether you would
4 produce reversible or irreversible
5 electroporation, and as I said, the parameters of
6 the energy then become very important, then the
7 number of pulses would be -- could be a very
8 important factor.
9 Q And if you're trying to treat a particular
10 condition using reversible or irreversible
11 electroporation, do you also have to understand
12 how many cells would be affected by the
13 irreversible or reversible electroporation?
14 ATTORNEY BRIGGS: Objection. Form.
15 A Can you clarify the question for me,
16 please?
17 Q Sure. So if you are trying to treat a
18 condition using -- let me -- for example, if
19 you're trying to destroy a tumor using
20 irreversible electroporation, would you have to
21 evaluate how many cells are affected and undergo
22 irreversible electroporation to understand whether

1 the therapy is effective?
2 ATTORNEY BRIGGS: Objection. Form.
3 A I don't think so.
4 Q How so?
5 A If I understood your question about the
6 number of cells, that implies to me you're sort of
7 counting the number of cells. And I -- I wouldn't
8 think that in the process of designing a therapy
9 you would necessarily need to count the number of
10 cells.
11 Q Would you need to understand that you
12 would reliably produce irreversible
13 electroporation across a certain area?
14 ATTORNEY BRIGGS: Objection. Form.
15 A Can you -- sorry, can you give me the
16 whole question?
17 Q Sure. If you were, for example, trying to
18 destroy a tumor, would you need to understand
19 whether you were reliably causing irreversible
20 electroporation across that entire tumor?
21 ATTORNEY BRIGGS: Objection. Form.
22 A I'm not sure I can answer that. The

1 question is a little broad. So I guess I'm not
2 sure how to answer that.
3 Q Okay. That's fine. We can move on.
4 So is Govind still using your -- your
5 device that you developed in your lab to evaluate
6 reversible and irreversible electroporation?
7 A My understanding is he is still using a
8 device that we developed in my lab.
9 Q And he is using it to evaluate whether he
10 will cause and -- strike that.
11 He is using it to evaluate whether he will
12 cause reversible or irreversible electroporation?
13 ATTORNEY BRIGGS: Objection. Form.
14 A So I'm not directly involved in his
15 experiments on animals. So my understanding is
16 that that is a question that he is interested in.
17 Q All right. I'm handing you Exhibit 2002
18 from IPR2024-00278.
19 Now, Dr. Bikson, this is a copy of your
20 CV, correct?
21 A (Document review.)
22 Yes.

1 Q Okay. Can you turn to Page 24 on the
2 bottom of, we'll say, 24 of 84. Actually, let's
3 go to Page 25.
4 A I'm on Page 25.
5 Q Okay. Do you see the section titled:
6 "Litigation support"?
7 A I do.
8 Q Do you -- you list a number of entries
9 below that.
10 Do you see that?
11 A I do.
12 Q Do the entries starting from Brown against
13 the Mount Sinai Medical Center up to Daniel
14 Richmond versus Southern California, do these
15 matters have anything to do with intellectual
16 property?
17 A Some of them relate to intellectual
18 property.
19 Q Which ones?
20 A There is one that's at the bottom of
21 page -- yes, at the bottom of Page 25, there is
22 one that starts with United States International

1 Trade Commission Washington D.C., matter of
2 Certain Noninvasive Aesthetic Body Contouring
3 Devices and Components.
4 Q Hold on. Let me stop you because I was
5 asking specifically about the entries from Daniel
6 Richmond versus Southern California, right above
7 that up to the top of the list.
8 A Oh, okay. Okay.
9 Q Let me start over.
10 Under litigation support for the entries
11 from Brown against the Mount Sinai Medical Center
12 up to Daniel Richmond versus Southern California
13 Edison Company, do any of these relate to
14 intellectual property?
15 A Yes.
16 Q Which one?
17 A Omand vs. Zabara, related indirectly --
18 related to intellectual property.
19 Q How did it relate to intellectual
20 property?
21 A That was the matter we were discussing
22 earlier where there was, as I remember it, there

1 were questions related to patents and inventions.
2 And the -- the facts or issues and the time frame
3 involved in the creation of those inventions.
4 Q And you were deposed in that case?
5 A I recollect being deposed.
6 Q For the entries that we're discussing,
7 Brown against the Mount Sinai Medical Center up to
8 Daniel Richmond versus Southern California Edison
9 Company, do you recall being deposed in any other
10 matter that's listed?
11 A I believe I was deposed in a matter that's
12 labeled Superior Court of the State of California
13 Los Angeles versus Southern California Edison
14 Company.
15 Q What was that case about?
16 A That -- if I remember correctly, that case
17 was about concerns about individuals who had been
18 exposed to electricity, accidental exposure to
19 electricity.
20 Q And do any of these other matters that
21 we've been discussing from Brown up to Superior
22 Court of the State of California, County of Los

1 Angeles, involve intellectual property other than
2 Omand vs. Zabara?
3 A Not that I recall.
4 Q So then starting with United States
5 International Trade Commission and then going
6 through on Page 26 up to Aerin Medical and the
7 Foundry, do you see that?
8 A I do.
9 Q Are these all intellectual property
10 matters?
11 A So the -- the item, just to get it clear.
12 So the first item which is U.S. -- the one, Trade
13 Commission, that one was -- I remember that one
14 was IP related.
15 The second item, Lumenis versus BTL, my
16 recollection was that one was intellectual
17 property related. The HiDow International matter,
18 I believe that was intellectual property related.
19 Wave Neuroscience vs. PeakLogic was intellectual
20 property related.
21 The Serendia matter, I'm not sure I was
22 retained on that matter, but I don't recall

1 actually getting to do any work on it so I just
2 listed it here for completion. And then also you
3 have the current matter.
4 Q For the HiDow International vs Wheellock,
5 what do you recall was the subject matter of your
6 consulting?
7 A The -- as I recall, it related to TENS,
8 which is transcutaneous electrical nerve
9 stimulation devices. These are wearable or
10 hand-held devices that apply energy to the body
11 through electrodes positioned on the body.
12 They're used for different purposes, including
13 management of pain, and that was the general area
14 of -- of that matter.
15 Q What were you asked to evaluate in that
16 matter?
17 A I don't remember exactly. So I don't want
18 to speculate.
19 Q Did you ever meet Scott Wolf as part of
20 your work on the International Trade Commission
21 case?
22 ATTORNEY BRIGGS: Objection. Form.

1 A Scott Wolf?
2 Q Does that name ring a bell?
3 A That name doesn't ring a bell, but, you
4 know, I've been -- I've interacted with a lot of
5 people in my career.
6 Q Do you recall if you met any of the
7 founders of the Zeltiq organizations that are
8 listed?
9 ATTORNEY BRIGGS: Objection. Form.
10 A I don't recall meeting the founders of the
11 Zeltiq corporation.
12 Q Now, for the cases that involve
13 intellectual property that we've been talking
14 about, apart from this matter, did any involve
15 devices intended to ablate tissue?
16 A Yes.
17 Q Which one?
18 A As I recall, the -- and again, it's been a
19 few years since, as best as I recall, the Brown
20 against Mount Sinai included ablation.
21 Q What type of case was that?
22 A If I remember correctly, that had to do

1 with an individual who had been injured during a
2 medical procedure.
3 Q And the medical procedure involved causing
4 an ablation?
5 A It's been a while, but as I recall, the
6 medical procedure was intended to produce a
7 controlled ablation, but instead it resulted in an
8 explosion inside the person's body.
9 Q Where was the ablation supposed to occur?
10 A It would have been somewhere in their
11 throat as I -- again, as I recollect it.
12 Q And what were you asked to evaluate there,
13 as best you can recall?
14 A As best as I recall, my analysis there
15 focused on the device itself, either whether the
16 device -- if the device had malfunctioned or if it
17 had been used according to its intended use. It
18 has been a while though, so I don't remember all
19 the details.
20 Q Do you recall what your conclusion was?
21 A I don't, but it was certainly the case
22 that obviously something had gone horribly wrong.

1 Q What year was that case?
2 A I see that it's -- the dates are not
3 marked here. Possibly about a decade ago.
4 Q Was that the first litigation matter that
5 you recall working on?
6 A I believe so, but I'm not entirely certain
7 that the items that I'm listing here are all in
8 the exact chronological order.
9 Q Apart from that matter and apart from the
10 Aerin Medical matter that's listed, do any of the
11 other matters under litigation support involve
12 devices that are intended to ablate tissue in the
13 body?
14 A I don't remember the precise details, but
15 I believe that the matter with United States
16 International Trade Commission had aspects of it
17 that were related to ablation.
18 Q What type of energy was delivered in
19 that -- in the International -- sorry, strike
20 that.
21 What type of energy was delivered by the
22 devices that were the subject of the International

1 Trade Commission case?
2 ATTORNEY BRIGGS: Objection. Form.
3 A So to the best of my recollection, it's
4 also a little bit complicated, because as I
5 remember it, there were many patents and devices
6 at issue there. Some of those -- and -- but
7 what -- what my contribution was, was that these
8 devices were related to the application of energy
9 to the body.
10 Q Do you recall what type of energy was
11 being applied to the body?
12 ATTORNEY BRIGGS: Objection. Form.
13 A As I recall, one type of energy was energy
14 that was generated, produced in the body through
15 magnetic stimulation using a coil.
16 And as best as I recall, another form of
17 energy was energy applied to the body using
18 electrodes. That was RF energy. There may have
19 been other types of energy as well.
20 Q And were the RF energy electrodes intended
21 to ablate tissue?
22 A As I recall, one use of those RF

electrodes specifically was for the purpose of ablation.

Q And do you recall where they were used in the body?

A I don't recall specifically, but based on what I remember about the case, this would have been on the surface of the body.

Q Like through skin?

A Correct. But, again, they were -- there were a lot of patents. As you know these patents can cover a very wide range of material, but generally what I remember as far as what I was working on the case, these were devices that were applied through the skin.

Q Were they intended to ablate tissue at the skin's surface?

A I don't recall.

Q And -- but they weren't -- those devices that were at issue in that case were not applying radiofrequency energy inside the nasal cavity; is that correct?

ATTORNEY BRIGGS: Objection. Form.

1 A I don't recall if that -- if application
2 within the nasal cavity would have been within the
3 scope of the materials in that case.
4 Q Now, below that you have a number of
5 patent applications and patents listed. Do you
6 see that?
7 A I do.
8 Q Are any of the patents that you list
9 directed to a device that is intended to ablate
10 tissue using the delivery of radiofrequency
11 energy?
12 A I don't recall.
13 Q Are any of the patents that you list
14 directed to a device that is intended to be
15 inserted into the nasal cavity?
16 ATTORNEY BRIGGS: Objection to form.
17 A I don't remember.
18 Q To the best of your recollection, none of
19 the patents are directed to a device that's
20 intended to be inserted into the nasal cavity; is
21 that correct?
22 ATTORNEY BRIGGS: Objection. Form.

1 A I don't recall one way or the other.
2 ATTORNEY COHEN: Do you have copies of his
3 declarations or --
4 ATTORNEY BRIGGS: I'm good.
5 ATTORNEY COHEN: -- printouts.
6 BY ATTORNEY COHEN:
7 Q All right. So now I'm going to turn to
8 your declarations that were offered in the Aerin
9 IPRs.
10 A Okay.
11 Q And we're going to start with the
12 declaration that you offered in IPR2024-00277
13 challenging or patent number 11,241,271.
14 A I'm sorry, maybe if it would be all right,
15 could we take a break now?
16 Q Sure.
17 A Okay.
18 Q Yeah, that's fine.
19 ATTORNEY BRIGGS: Perfect stopping point.
20 (Recess.)
21 BY ATTORNEY COHEN:
22 Q So before the break we started looking at

1 the declaration that you offered in IPR2024-00277
2 on Patent Number 11,241,271.
3 You have that in front of you, correct?
4 A I have my declaration, yes.
5 Q Okay. Now, you have a copy reproduced in
6 your declaration on Page 16 of the independent
7 challenged Claim 1.
8 Do you see that?
9 A I see it.
10 Q Okay. And that's in paragraph 48,
11 correct?
12 A Yes.
13 Q And this is, as you say, the only
14 independent claim of the '271 patent and it starts
15 with "a method for treating a nasal airway to
16 reduce mucous production."
17 Do you see that?
18 A I see that.
19 Q And a physician would practice a method
20 for treating a nasal airway to reduce mucous
21 production; is that correct?
22 ATTORNEY BRIGGS: Objection. Form.

1 A I understand that that is something a
2 physician could practice, yes.
3 Q You would not perform a method for
4 treating a nasal airway to reduce mucous
5 production; is that correct?
6 ATTORNEY BRIGGS: Objection to form.
7 A I wouldn't perform any medical treatment
8 on a patient.
9 Q Okay. And that -- this claim is directed
10 to a medical treatment being performed on a
11 patient, correct?
12 ATTORNEY BRIGGS: Objection to form.
13 A My understanding that -- as it's written,
14 that it's a method for treating the nasal airway
15 to reduce mucous production.
16 Q And so that is a medical treatment being
17 performed on a patient, correct?
18 ATTORNEY BRIGGS: Objection to form.
19 A Yeah, I understand that that can refer to
20 a medical treatment performed on a patient.
21 Q Do you know what type of physicians would
22 perform the method that's described in challenged

1 Claim 1?
2 A You mean what would be their specialty?
3 I don't know among the medical specialties
4 who would, you know, be licensed to do these type
5 of procedures.
6 Q Okay. Have you heard of sinus surgeons?
7 A I have not.
8 Q Have you heard of otolaryngologists?
9 A I've heard that term, yes.
10 Q Would an otolaryngologist perform a method
11 for treating a nasal airway to reduce mucous
12 production using the steps in challenged Claim 1?
13 ATTORNEY BRIGGS: Objection to form.
14 A I don't know.
15 Q Okay.
16 A I don't know if they would be allowed to
17 do that procedure.
18 Q Now, you offer an opinion starting on
19 Page 11 to Page 13 on the definition of a person
20 of ordinary skill in the art.
21 Do you see that?
22 ATTORNEY BRIGGS: Objection to form.

1 A On Page 11 to 13 is the section: "Person
2 of ordinary skill in the art."
3 Q And in paragraph 38, you say, "I disagree
4 with part 2 of petitioner's definition."
5 Do you see that?
6 A Yes.
7 Q And in paragraph 41, you offer your
8 opinion on the correct definition of a person of
9 ordinary skill in the art, correct?
10 A Yes.
11 Q In forming the opinion that's in
12 paragraph 41, what did you consider?
13 ATTORNEY BRIGGS: Objection to form.
14 A In trying to understand the qualifications
15 for a POSITA, I considered the -- the patent, the
16 specifications and the claims.
17 Q And in your definition, you remove as a
18 category of experience the clinical use or testing
19 of medical devices; is that correct?
20 ATTORNEY BRIGGS: Objection. Form.
21 A The -- the petitioner's definition, the
22 clause 2, is "at least three years of experience

1 in the clinical use, design, development, and/or
2 testing of medical devices including medical
3 devices to deliver energy to the tissue."
4 And then the definition I proposed is "at
5 least three years of experience in the design and
6 development of medical devices, including medical
7 devices that deliver energy to tissue."
8 Q So in your definition, you removed the
9 three years of experience in the clinical use
10 and/or testing of medical devices, correct?
11 ATTORNEY BRIGGS: Objection. Form.
12 A I see that clinical use was removed and/or
13 testing was removed.
14 Q Okay. And we just discussed that the
15 claims are directed to the clinical use of a
16 device, correct?
17 ATTORNEY BRIGGS: Objection. Form.
18 Q It's on Page 16.
19 A I understand that the claims are directed
20 to a method that can be used as part of a medical
21 treatment, yes.
22 Q And it's your opinion that clinical use

1 should not be part of the POSITA definition?
2 A In my definition it's three years of
3 experience in the design and development of
4 medical devices.
5 Q Even though the claims are directed to the
6 clinical use of a device, correct?
7 A Yes. The --
8 Q You say that this includes medical devices
9 that deliver energy to the -- to tissue.
10 Actually, let me just state the whole thing: "At
11 least three years of experience in the design and
12 development of medical devices, including medical
13 devices that deliver energy to tissue."
14 Do you see that?
15 A Yes.
16 Q So in your opinion, the experience in the
17 design and development of medical devices is not
18 limited to medical devices that deliver energy to
19 tissue.
20 Do I understand that correctly?
21 ATTORNEY BRIGGS: Objection to form.
22 A I believe that the appropriate background

1 of a POSITA would be one that includes medical
2 devices that deliver energy to the tissue.
3 Q And my question is: The design and
4 development that you include here of medical
5 devices is not limited to medical devices that
6 deliver energy to tissue; is that correct?
7 A If I understand your question, the first
8 part, the design and development of medical
9 devices is all medical devices, but the second
10 part is including medical devices that deliver
11 energy to the tissue.
12 Q Okay. And I guess my question is, the "at
13 least three years of experience in the design and
14 development of medical devices" could include
15 medical devices that do not deliver energy to
16 tissue?
17 A Some of that experience could be about
18 other things.
19 Q Okay. Are you familiar -- I think we
20 talked about this earlier. Are you familiar with
21 the products sold by the patent owner Aerin
22 Medical?

1 A I'm not familiar with those products.
2 Q Have you in the course of your career ever
3 reviewed instructions for use that are provided
4 with medical devices to physicians who use those
5 devices?
6 ATTORNEY BRIGGS: Objection to form.
7 A I have reviewed instructions for use for
8 medical devices that are provided to clinicians
9 who use medical devices.
10 Q What's your understanding of how
11 instructions for use are used?
12 ATTORNEY BRIGGS: Objection to form.
13 A I'm not sure the question.
14 Q What is your understanding of the purpose
15 of having instructions for use?
16 ATTORNEY BRIGGS: Objection. Form.
17 A The instructions for use would be to
18 support the -- the appropriate use of the devices.
19 Q And are the instructions for use typically
20 used by doctors and other clinicians that are
21 using a device?
22 ATTORNEY BRIGGS: Objection to form.

1 A Sorry, can you say the question again?
2 Q Sure. The instructions for use that are
3 provided with the device are intended to be read
4 and understood by doctors and clinicians that are
5 using that device; is that correct?
6 ATTORNEY BRIGGS: Objection to form.
7 A There are -- there are instructions that
8 are provided with a device, and, again, depending
9 on the device, some of those instructions would be
10 for the person operating the device, which could
11 be a clinician.
12 Q Exhibit A.
13 (Bikson Exhibit A, Instructions for Use
14 RhinAer Stylus, marked for identification.)
15 Q So I'm handing you what's been marked as
16 Bikson Exhibit A. Have you ever seen this before?
17 ATTORNEY BRIGGS: Objection. Form.
18 A (Document review.)
19 I have not seen this before.
20 Q Okay.
21 A I don't recall seeing this before.
22 Q Okay. For the record, these are

1 instructions for use RhinAer stylus that I pulled
2 from the Internet.
3 Now, on Page 3 -- of the instructions I
4 just sent, I just gave you.
5 A Okay.
6 Q It's three of 12. Now, you've reviewed
7 instructions for use before, correct?
8 ATTORNEY BRIGGS: Objection to form.
9 A I have reviewed instructions for medical
10 use of devices.
11 Q Okay. Now do you see on Page 3 there is
12 an intended user section. It says, "The intended
13 users of the RhinAer stylus are physicians,
14 including otolaryngologists, maxillofacial
15 surgeons, and other physicians specialized in
16 nasal procedures."
17 Do you see that?
18 A I see that.
19 Q And I think we covered earlier, you don't
20 know what other physicians specialized in nasal
21 procedures would cover, correct?
22 A I don't.

1 Q Now, if you go back to Page 2, you'll see
2 that there is a description of the device,
3 correct?
4 ATTORNEY BRIGGS: Objection. Form.
5 A I see the device description section.
6 Q Okay. And this is saying that "the
7 RhinAer stylus is a disposable hand-held device
8 capable of delivering bipolar energy to tissue,"
9 correct?
10 A I see that.
11 Q And then in the next paragraph, it talks
12 about the stylus, and it says in the second full
13 sentence, "an array of bipolar electrodes is
14 positioned on a nonconductive tip," correct?
15 A I see that.
16 Q So this is communicating to intended users
17 aspects of the device including that it has
18 bipolar electrodes, correct?
19 ATTORNEY BRIGGS: Objection to form.
20 A It's a description of the device.
21 Q And the instructions for use are intended
22 to be used by the people using the device,

1 correct?
2 ATTORNEY BRIGGS: Objection. Form.
3 A Instructions for use would be generally
4 directed for the people who are using the device.
5 Q Okay. And then also on Page 2, below the
6 pictures of the device and the electrodes, it also
7 talks about how the stylus treats symptoms of
8 chronic rhinitis.
9 And you can read that paragraph if you
10 like.
11 A I'm sorry, which? The third paragraph,
12 you mean?
13 Q The third full paragraph on Page 2 that
14 starts "The RhinAer stylus treats symptoms."
15 A Sure.
16 (Document review.)
17 I see that.
18 Q So this is describing how low doses of
19 radiofrequency energy destroy tissue, correct?
20 ATTORNEY BRIGGS: Objection. Form.
21 A I guess it's a description of the device
22 and how low power radiofrequency energy generates

1 heat, creating a coagulation lesion.
2 Q And this entire document is intending to
3 be directed to physicians who are using the
4 RhinAer stylus, correct?
5 ATTORNEY BRIGGS: Objection to form.
6 A I understand that this document is
7 directed towards individuals who are using the
8 device that it's referring to.
9 Q You can set that aside.
10 Going back to your declaration for the
11 '271 patent, you offer the opinion that one of the
12 references relied on in the petition, Stern, does
13 not have bipolar electrode pairs; is that correct?
14 ATTORNEY BRIGGS: Objection to form.
15 A Can you just point me to where you are in
16 the document?
17 Q Yeah, if you can go to Page 24.
18 A I'm at Page 24.
19 Q Okay. And in paragraph 64, you say, "I
20 disagree with petitioners that Stern teaches the
21 claimed bipolar electrode pairs. Rather, Stern
22 teaches a device comprising at most a single pair

1 of bipolar electrodes."
2 Do you see that?
3 A I do.
4 Q Okay. You also offer similar opinions in
5 your other declarations that Stern does not
6 disclose multiple pairs of bipolar radiofrequency
7 electrodes; is that correct?
8 ATTORNEY BRIGGS: Objection. Form.
9 A Stern does not disclose the elements in
10 the claim that relate to those issues.
11 Q And your position is that Stern does not
12 disclose more than one pair of bipolar electrodes,
13 correct?
14 ATTORNEY BRIGGS: Objection. Form.
15 A Yes. Stern teaches a device comprising at
16 most a single pair of bipolar electrodes.
17 Q And that's because in paragraph 68, you
18 have the opinion that there are no pairs when all
19 of the switches are open in Stern's device, and
20 therefore a pair is only formed when certain
21 switches are closed, correct?
22 A A bipolar pair is only formed in Stern

1 Figure 15 when certain switches are closed.
2 Q Can you turn back to Page 16 of this
3 declaration?
4 A I'm now on Page 16.
5 Q Okay. What we see is the challenged
6 Claim 1 from the '271 patent that's reproduced,
7 correct?
8 A Yes.
9 Q And we were talking earlier, it's a method
10 for treating a nasal airway, correct?
11 A The first element is a method for treating
12 a nasal airway.
13 Q And it includes three method steps,
14 "contacting, applying, and removing."
15 Do you see that?
16 ATTORNEY BRIGGS: Objection. Form.
17 A I see 1A starts with contacting; 1B starts
18 with applying; and 1C has -- starts with removing.
19 Q Okay. And focusing specifically on
20 limitation 1A, it talks about "contacting a
21 treatment element of a nasal airway treatment
22 device directly with nasal mucosa of the nasal

1 airway, wherein the treatment element comprises
2 two rows of bipolar electrode pairs."
3 Do you see that?
4 A I do.
5 Q And 1B says "applying radiofrequency
6 energy with the bipolar electrode pairs through
7 the nasal mucosa to a target tissue underlying the
8 nasal mucosa," correct?
9 A Yes.
10 Q Now, under the -- under Claim 1, when the
11 treatment element is being -- is -- that first
12 step is being performed where you are contacting a
13 treatment element of a device directly with nasal
14 mucosa, no radiofrequency energy is being
15 delivered by that device, correct?
16 ATTORNEY BRIGGS: Objection. Form.
17 A I don't know if that's necessarily the
18 case.
19 Q In your opinion, would you already be
20 applying radiofrequency energy before you contact
21 nasal mucosa?
22 ATTORNEY BRIGGS: Objection. Form.

1 A I don't know if you're asking what I would
2 do or what's sort of --
3 Q I guess --
4 A -- reflected in the claim.
5 Q -- in your opinion, what's required by the
6 claim?
7 ATTORNEY BRIGGS: Objection to form.
8 A In my opinion, what's required by the
9 claim is -- is contracting a treatment element
10 with the remaining terms. Then it's required that
11 you apply the radiofrequency energy with
12 additional qualifications. And then it's required
13 that you remove the treatment element.
14 Q Okay. So in your view, no radiofrequency
15 energy under this claim is being applied when you
16 contact the treatment element with the nasal
17 mucosa, correct?
18 ATTORNEY BRIGGS: Objection to form.
19 A Are you referring to something specific in
20 my report or are you just asking me in general?
21 Q I'm -- I'm asking you in general. In
22 your -- related to your opinions you've offered in

1 this declaration, is it your opinion that there is
2 any radiofrequency energy being delivered when you
3 contact the treatment element with nasal mucosa?
4 ATTORNEY BRIGGS: Objection. Form.
5 A I don't recollect providing an opinion on
6 that. If you could point me to where in my report
7 I provided an opinion on that.
8 Q I guess my question is: In your opinion
9 if a device like Stern does not have bipolar
10 electrode pairs because its switches are open and
11 you only form pairs when the switches are closed,
12 is a device that is not applying radiofrequency
13 energy, does it have two rows of bipolar electrode
14 pairs? Or is a bipolar electrode pair only formed
15 when energy is being delivered?
16 ATTORNEY BRIGGS: Objection. Form.
17 A I'm sorry. I heard multiple questions.
18 Can you just --
19 Q Yeah, let me -- I think the last question
20 there is what I'm really curious about.
21 It's your opinion that Stern does not have
22 bipolar electrode pairs, correct?

1 A Stern has, at most, a single pair of
2 bipolar electrodes.
3 Q And that's because it's only delivering
4 energy through one pair at a given time, correct?
5 A Stern delivers energy through, at most, a
6 single pair at a given time.
7 Q And that's why it does not have multiple
8 pairs of bipolar electrodes, in your opinion?
9 A Stern does not teach bipolar electrode
10 pairs.
11 Q Because it, in your opinion, does not
12 teach delivering energy through multiple pairs at
13 the same time, correct?
14 A I think that if Stern did teach delivering
15 energy through multiple pairs at the same time,
16 then that would be bipolar electrode pairs.
17 Q Okay. And so my question going back to
18 the claim on Page 16, will a device that's not
19 delivering any radiofrequency energy have two rows
20 of bipolar electrode pairs?
21 A A device that is not delivering any
22 electrical energy can have two rows of bipolar

electrode pairs.

Q How would it have two rows of bipolar electrode pairs?

A So, for example, in my report on Page 30, I point to Figure 8F, which is from the patent. And there you can see a device which has two rolls -- two rows of bipole electrode pairs.

Q Okay. Those are not actually going to be performing as bipolar pairs until energy is delivered, correct?

A I don't know what you mean by performing.

Q Will they -- you would agree that when this device is taken out of the box, energy is not being delivered, correct?

ATTORNEY BRIGGS: Objection to form.

A I think you're asking me when the device is, let's say, first delivered and is taken out of the box and it's not being powered is any electrical stimulation being delivered through electrodes. So not at that point.

Q But this device still, in your opinion, would have bipolar electrode pairs?

1 A The device shown in Figure 8F shows a
2 device with two rows of bipolar electrode pairs.
3 Q Now, in Stern, and I'm not talking about
4 the part of your opinion about the two rows, I'm
5 just talking about the bipolar electrode pairs.
6 If we go to Page 28, okay, so you see that there
7 in Figure 19, there is an array of electrodes,
8 correct?
9 ATTORNEY BRIGGS: Objection to form.
10 A I see the -- the -- I see the devices that
11 are marked in -- there is, like, two Figure 19s.
12 Q Okay. And it's your opinion that this
13 doesn't have multiple bipolar electrode pairs
14 because the pairs are not delivering energy at the
15 same time, correct?
16 A The -- so I just want to clarify that
17 the -- the figure -- Figure 19 that's being shown
18 here is not directly the way it was in the
19 original patent. The purple stuff that you're
20 seeing here in the figures were additions made
21 after the fact.
22 So I'm sorry. So if you can just repeat

1 the question.
2 Q Okay. So my question is: There are four
3 electrodes, setting aside the purple annotations,
4 Figure 19 in Stern shows four electrodes, correct?
5 ATTORNEY BRIGGS: Objection to form.
6 A Figure 19, where it's the three -- my
7 understanding is that those -- that 322 label
8 refers to electrodes.
9 Q Okay. And it's your opinion that Stern
10 does not disclose multiple pairs of bipolar
11 electrodes because it doesn't disclose delivering
12 bipolar energy through four electrodes at the same
13 time?
14 ATTORNEY BRIGGS: Objection to form.
15 A If Stern had -- it did not, but if it had
16 disclosed delivering energy through four
17 electrodes at the same time, then it might have
18 shown multiple bipolar pairs.
19 Q Okay. So then if we look at the device on
20 Figure 8F which you were referring to earlier on
21 Page 30.
22 A Yes.

1 Q If each of these pairs were individually
2 energized, would that device have multiple bipolar
3 electrode pairs?
4 ATTORNEY BRIGGS: Objection to form.
5 A Can you clarify what you mean by
6 individually?
7 Q Sure. Let's say you deliver energy
8 through one pair, then you turn that off; then you
9 deliver energy through another pair of electrodes,
10 then you turn it off; and then you deliver energy
11 through a third pair and you turn it off; does
12 that device have multiple bipolar electrode pairs?
13 A If the device in Figure 8F was used
14 according to your description, from what I -- from
15 what I understand your -- your hypothetical, that
16 device would have multiple electrode pairs.
17 Q Sorry. It would have multiple electrode
18 pairs?
19 A Yes.
20 Q Why would that device have multiple
21 electrode pairs but Stern does not?
22 A So if you look at Figure 8F, you'll see

1 that there is two rows. And even if we just look
2 at one row, you'll see where it's marked positive
3 negative, positive negative, positive negative; so
4 the positive and negative, you can say -- if
5 you -- each positive and negative is a bipolar
6 pair. So now you have three bipole pairs. So
7 just in a single row in Figure 8F you can see that
8 there are multiple pairs, and also multiple pairs
9 in a row.
10 Q Right. I guess my question is: Setting
11 aside the rows, it is your opinion that Stern does
12 not disclose multiple pairs of bipolar electrodes,
13 correct?
14 A Stern does not disclose multiple pairs of
15 bipolar electrodes.
16 Q Okay. And it's your opinion that it
17 doesn't do that because it only delivers energy
18 through a single pair at a given time, correct?
19 And that's in paragraph 68 and in 69.
20 A I'm sorry, could you repeat the question?
21 Q Sure. My question was: It's your opinion
22 that Stern does not disclose multiple pairs of

1 bipolar electrodes because, in your opinion, it
2 only delivers energy through a single pair at a
3 given time, correct?
4 A I think it would be more correct to say
5 that if Stern had shown delivery of energy through
6 multiple pairs of bipolar electrodes at the same
7 time, then Stern could be showing multiple bipolar
8 electrode pairs.
9 Q But it has to show that you would deliver
10 energy through multiple pairs at the same time?
11 ATTORNEY BRIGGS: Objection. Form.
12 A I don't think that's the way I described
13 it in my report.
14 Q Well, I'm just -- I think that's what you
15 were just saying. If Stern had shown delivery of
16 energy through multiple pairs at the same time,
17 then Stern could be showing multiple bipolar
18 electrode pairs, correct?
19 A Yes, I think that's what I just said.
20 Q Okay. Because you agree that Stern
21 shows -- if we look at Figure 15 on Page 24, Stern
22 shows four different electrodes, correct?

1 A Figure 15, my understanding is that the
2 elements that are labeled 220, 222, 224, and 226
3 refer to electrodes.
4 Q Okay. And Stern teaches that you could
5 pair -- you agree Stern teaches you could pair,
6 for example, 220 and 222, correct?
7 A And I -- I don't want to -- I know -- I
8 want to answer your question, but then I wouldn't
9 mind having another restroom break.
10 ATTORNEY BRIGGS: You have to answer the
11 question.
12 A Yeah, so I just want to -- go ahead.
13 Q Okay. You agree -- just a couple more
14 questions, then I promise, just two more minutes.
15 A Sure. Sure.
16 Q You agree Stern teaches you could pair 220
17 and 222, correct?
18 A You could pair 220 and 222?
19 I believe that if -- if switches 248 and
20 236 were closed, then you would pair electrodes to
21 220 and 222. If that's what you're asking.
22 Q Yes. And 224 and 226 could also be

1 paired, correct?
2 A So if you were to start over and you were
3 to close -- if all the switches were open and then
4 you close two other switches, you could pair 224
5 and 226. Sorry, yeah.
6 Q And that's a different pair than 220 and
7 222, correct?
8 A 224 and 226 are different electrodes than
9 220 and 222.
10 ATTORNEY COHEN: All right. We can take a
11 quick break.
12 THE WITNESS: Okay.
13 (Recess.)
14 BY ATTORNEY COHEN:
15 Q I'm handing you Neurent Exhibit 1033.
16 This is the Stern patent that we've been talking
17 about.
18 This is the Stern patent that you reviewed
19 in providing your opinions in this case, correct?
20 A Yes.
21 Q Okay. And we have been talking a lot
22 about how it's your opinion that Stern does not

1 disclose bipolar electrode pairs, correct?
2 A Stern teaches at most a single pair of
3 bipolar electrodes.
4 Q And that's, in your opinion, because it
5 teaches delivering energy through a single pair at
6 a given time, correct?
7 A Stern does teach delivering energy through
8 a single pair.
9 Q Okay. You agree that Stern shows
10 different pairs of electrodes, correct?
11 A I agree that Stern shows that different
12 pairs can be stimulated.
13 Q Okay. And the why it doesn't disclose
14 multiple pairs is because those pairs are not
15 being stimulated at the same time?
16 A I think I would say that if Stern had
17 shown that multiple pairs were being stimulated at
18 the same time, then Stern would have shown
19 multiple bipolar electrode pairs.
20 Q Okay. And because Stern does not say to
21 stimulate multiple pairs at the same time, it does
22 not disclose multiple bipolar electrode pairs,

1 correct?
2 ATTORNEY BRIGGS: Objection. Form.
3 A If Stern had shown stimulation of multiple
4 bipolar pairs at the same time, then Stern would
5 have demonstrated bipolar electrode pairs,
6 multiple bipolar electrode pairs.
7 Q Okay. Can you turn to Column 13 in Stern.
8 And can you go to around line 39. And read that
9 paragraph that begins, "The embodiment of
10 Figure 15 not only provides a choice."
11 Do you see that?
12 A (Document review.)
13 Yes.
14 Q And do you see that paragraph, "The
15 embodiment of Figure 15, not only provides a
16 choice between monopolar and bipolar operations,
17 but also provides flexibility within the bipolar
18 operation so that any pair or any combination of
19 pairs of electrodes may be utilized together."
20 Do you see that?
21 A I see that.
22 Q Okay. So there it is saying that you can

1 use a combination of pairs together, correct?
2 ATTORNEY BRIGGS: Objection. Form.
3 A It's saying -- it reads, "any pair of any
4 combination of pairs may be utilized together."
5 Q Okay. So there it is saying you can use
6 pairs of electrodes together.
7 ATTORNEY BRIGGS: Objection. Form.
8 Q Correct?
9 A It says, "Or any combination of pairs of
10 electrodes may be utilized together."
11 Q Okay. And so that's talking about using
12 more than one pair of electrodes together,
13 correct?
14 A What Stern is describing there, as I
15 understand it, could be selecting, for example,
16 one pair of electrodes, and then through closing
17 switches, and then you can separately start with a
18 situation where you have the switches are open and
19 you could close switches. So that would activate
20 a pair separately from the first pair.
21 Q Okay. So you would be using two different
22 pairs of electrodes together, correct?

1 ATTORNEY BRIGGS: Objection. Form.
2 A I don't think he describes using -- I
3 wouldn't describe it that way.
4 Q Okay. But I guess in the combination of
5 pairs, it's your opinion that Stern is saying
6 activate one pair of electrodes and then activate
7 a second set of electrodes, correct?
8 A Stern is saying that you can at one point
9 choose to activate a single pair of electrodes.
10 You could then open the switches. It's then
11 possible to activate another different pair of
12 electrodes.
13 Q Okay. And so if a device only delivered
14 RF energy through a single pair of bipolar
15 electrodes at a time, in your opinion that device
16 would not have multiple bipolar electrode pairs,
17 correct?
18 ATTORNEY BRIGGS: Objection. Form.
19 A Are you referring to something specific in
20 my report?
21 Q Well, it's your opinion with Stern,
22 correct?

1 ATTORNEY BRIGGS: Objection. Form.
2 A Sorry, can you repeat the question?
3 Q Sure. You agree Stern has at least two
4 different pairs of bipolar electrodes, correct?
5 ATTORNEY BRIGGS: Objection. Form.
6 A I think we've discussed that Stern allows
7 you to select one pair of electrodes. And then if
8 you return to the situation where the switches
9 were open, you can select then another single,
10 different pair.
11 Q Okay. And those are, as we talked about,
12 two different pairs, correct?
13 A The electrodes selected in the example we
14 just went through, if I understand it, you could
15 select, for example, 220 and 222. But in another
16 example, you could select 224 and 226.
17 Q And Stern discloses that you could select
18 220 and 222 and then select 224 and 226, correct?
19 ATTORNEY BRIGGS: Objection. Form.
20 A I'm not sure what you mean by, "and then."
21 Q We were just talking about the line where
22 Stern says you can -- you can use combination --

1 "any combination of pairs of electrodes may be
2 utilized together," correct?
3 A I see that.
4 Q Okay. So there what we were talking
5 about, in your opinion, you could select one pair
6 and then use a second pair.
7 A You could select one pair, apply energy to
8 that one pair. You could separately select
9 another pair and apply energy to that other pair.
10 Q Okay. And so that would involve two
11 different pairs of electrodes, correct?
12 A The pairs used in the first case may not
13 be the pairs used in the second case.
14 Q Okay. So that is two different pairs of
15 electrodes, correct?
16 A The pairs used in the first case do not
17 have to be the same as the pair -- bipolar pair
18 used in the second case.
19 Q Okay. So that is two separate pairs,
20 correct?
21 ATTORNEY BRIGGS: Objection. Form.
22 A They do not have to be the same pairs in

1 the first case as in the second case.
2 Q Okay. And I guess my question is more:
3 Then that would include two pairs of bipolar
4 electrodes, one pair in the first case, and one
5 pair in the second case.
6 But there are two pairs, correct?
7 A If you were to -- we talked about a first
8 case where you had one pair. We talked about a
9 second case where you also had one pair. If you
10 were to then add those up, you would get to the
11 number two.
12 Q Okay.
13 A That would be two separate cases though.
14 Q What do you mean two separate cases?
15 A In the one case you have one pair. In
16 another case you have a different pair.
17 Q Okay. And Stern teaches that you could
18 use that combination of pairs together, correct?
19 ATTORNEY BRIGGS: Objection. Form.
20 A Stern writes, "bipolar operations that any
21 pair or any combination of pairs of electrodes may
22 be utilized together."

1 But as I've explained, what Stern is about
2 is just selecting a single pair, and then you can
3 disconnect.
4 Q And be energized through a pair?
5 A You could start over and select a
6 different pair and energize that pair, yes.
7 Q When you say "start over," what do you
8 mean?
9 A You start from the condition -- as Stern
10 explains where all the switches are open. When
11 all the switches are open, there is no bipolar
12 electrode pair in Stern. And then Stern explains
13 that you close two switches to form a pair. Which
14 switches you close will determine the pair. So
15 you could have a situation where you close a given
16 two switches and produce a given pair. You could
17 have a different situation where you close a
18 different two switches and then you would activate
19 a different pair, but obviously in each one of
20 those cases you would just have one pair.
21 Q Okay. So delivery of energy through a
22 single bipolar pair at a time, in your opinion,

1 does not involve multiple bipolar electrode pairs,
2 correct?
3 ATTORNEY BRIGGS: Objection. Form.
4 A Can you repeat the question?
5 Q Delivery of energy through a single
6 bipolar pair at a time, in your opinion, even
7 though there might be different bipolar pairs,
8 does not involve multiple bipolar electrode pairs,
9 correct?
10 ATTORNEY BRIGGS: Objection. Form.
11 A My analysis is -- well, we're talking
12 maybe specifically now about Stern. If Stern had
13 shown the delivery of energy to two or more pairs
14 of bipolar electrodes, then in that case Stern
15 would be showing multiple bipolar electrode pairs.
16 Q If you turn back to your declaration and
17 we go to Page 30 where you have Figure 8F. And
18 this is from the '271 patent, correct?
19 A I see that, yes.
20 Q So in the '271 patent, give me a minute --
21 ATTORNEY BRIGGS: We'll mark it?
22 ATTORNEY COHEN: Well, this is exhibit.

1 ATTORNEY BRIGGS: 1001.
2 ATTORNEY COHEN: 1001. From the 271 IPR.
3 But this is an unstamped copy.
4 ATTORNEY BRIGGS: We'll go with the true
5 and correct -- we'll go with the representation
6 that this is a true and correct copy of
7 Exhibit 1001 from IPR2024-00277.
8 Q And you reviewed the '271 patent, correct,
9 Dr. Bikson?
10 A I did.
11 Q Okay. And we've been talking about
12 Figure 8F, correct?
13 A We did discuss Figure 8 -- just turning to
14 it now. We did discuss Figure 8F.
15 Q Okay.
16 So if you go to paragraph -- or column 23
17 of the '271 patent.
18 A Column 23.
19 Q Yeah. Down at line -- starting at Line 40
20 and going into Column 24, Line 17, do you see that
21 there this is a description of figures 8F and 8G?
22 A Okay.

1 (Document review.)
2 Okay.
3 Q So this is talking about the bipolar
4 electrode pairs in 8F and 8G, correct?
5 ATTORNEY BRIGGS: Objection. Form.
6 A It's a description of the -- yeah, it
7 includes a description of the Figure 8F and
8 Figure 8G.
9 Q So in Column 23, Line 64, it -- and 65, it
10 says that "in some embodiments, each pair
11 comprising an array or multiple pairs -- each pair
12 of electrodes or each electrode may have a
13 separate controlled electrical channel to allow
14 for different regions of the treatment element to
15 be activated separately," correct?
16 A I see that.
17 Q Okay. So in that description there is an
18 embodiment where you can selectively activate one
19 pair of electrodes and then activate a different
20 pair, correct?
21 A So the text talks about an embodiment
22 where you would have separate controlled

electrical channels to allow for different regions to be activated separately.

Q Okay. So you could separately activate each pair of electrodes in this embodiment, correct?

A You can separately activate selected pairs.

Q Okay. Well, you can actually activate a single pair at a time because it says, "Each pair may have a separate controlled electrical channel," correct?

A Could you repeat the question?

Q This says you could activate a single pair at a time because it says each pair of electrodes, bipolar, may have a separate controlled electrical channel to allow for different regions to be activated separately?

A You're asking me whether this is consistent with being able to activate a single pair?

Q Correct.

A That is my understanding.

1 Q Okay. All right. You can set that aside
2 for now.
3 Okay. So we're going to turn to your '318
4 declaration.
5 ATTORNEY BRIGGS: How much time do you
6 want on '318?
7 ATTORNEY COHEN: I'm sorry?
8 ATTORNEY BRIGGS: I'm just wondering how
9 much time you need on '318 or if you want to keep
10 going or lunch?
11 ATTORNEY COHEN: What, do you want to do
12 lunch now.
13 ATTORNEY BRIGGS: You're going to do
14 probably more than half an hour, I'd like to lunch
15 now. If you're going to do less than half an
16 hour, then it's fine with me.
17 ATTORNEY COHEN: Let's go for a little bit
18 and then we'll stop.
19 ATTORNEY BRIGGS: Sure.
20 BY ATTORNEY COHEN:
21 Q So you're looking at your declaration from
22 IPR2024-00278 related to patent number 11,033,318.

1 Do you have that in front of you?
2 A Yes.
3 Q Okay. Can you turn to Page 16 of your
4 declaration.
5 A I'm on Page 16.
6 Q Okay. And do you see that this is
7 independent challenged Claim 1?
8 A I see that.
9 Q Okay. And this is a device for delivering
10 energy, correct?
11 A Yeah, the first -- it starts with a,
12 "device for delivering energy."
13 Q Okay. And you see that limitation 1D is
14 to "an array of multiple pairs of bipolar
15 radiofrequency electrodes disposed along the
16 treatment surface of the treatment element,"
17 correct?
18 A Yes, that is 1D.
19 Q And it's your opinion that Stern does not
20 disclose an array of multiple pairs of bipolar
21 radiofrequency electrodes because it discloses
22 only activating one pair at a time, correct?

A Are you asking me about something specific in this report? About a specific section.

Q It's the same opinion we've been discussing, but if you want to see it, it's on Page 22 --

A Okay.

Q -- to, like, 24.

A I'm sorry. Can you repeat the question, please?

Q Sure. It's your opinion that Stern does not disclose an array of multiple pairs of bipolar radiofrequency electrodes because, although it discloses different pairs of electrodes, it discloses only activating each pair at a single time, correct?

ATTORNEY BRIGGS: Objection. Form.

A My analysis is that if Stern is shown activating multiple bipolar pairs at the same time, which it does not, then it may have shown multiple pairs of bipolar radiofrequency electrodes.

Q Okay. Because we agree that Stern shows

1 different pairs of bipolar electrodes, correct?
2 A As we discussed, Stern does go through
3 different cases. And one case you could have one
4 pair. In another case you could have a different
5 pair.
6 Q Okay. And the issue with Stern in your
7 opinion is that it's not disclosing activating
8 those pairs at the same time?
9 ATTORNEY BRIGGS: Objection. Form.
10 A Yeah, can you just clarify what you mean
11 by my issue?
12 Q Your opinion that Stern does not disclose
13 multiple pairs of bipolar radiofrequency
14 electrodes is because Stern does not disclose
15 activating its different pairs of bipolar
16 electrodes at the same time?
17 ATTORNEY BRIGGS: Objection. Form.
18 A My opinion is that if Stern had disclosed
19 activating multiple pairs of bipolar
20 radiofrequency electrodes at the same time, then
21 he may have satisfied the multiple pairs of
22 bipolar radiofrequency electrodes element.

1 Q Because Stern does disclose different
2 pairs of bipolar radiofrequency electrodes,
3 correct?
4 ATTORNEY BRIGGS: Objection. Form.
5 A Stern discloses activating one pair of
6 bipolar electrodes. Stern also describes that you
7 could have activated a different pair, a single
8 different pair of electrodes.
9 Q Okay. If you go back to Page 16, when a
10 device is -- when one of these devices is sold and
11 shipped to a physician, you would agree it is not
12 in that state delivering radiofrequency energy,
13 correct?
14 ATTORNEY BRIGGS: Objection. Form.
15 A When a device is shipped and it's in the
16 box, it is in that state not passing current from
17 itself into the body.
18 Q And so in that state, does it have an
19 array of multiple pairs of bipolar radiofrequency
20 electrodes?
21 ATTORNEY BRIGGS: Objection to form.
22 A I think that answer would depend on the

1 device.
2 Q What would it depend on?
3 A Just that, if it has an array of multiple
4 pairs of bipolar radiofrequency electrodes.
5 Q Well, you only know that if it's going to,
6 in your opinion activate multiple pairs at the
7 same time?
8 ATTORNEY BRIGGS: Objection. Form.
9 A I don't think that's what I said.
10 Q Well, I'm trying to understand what the
11 difference is between Stern and any other device
12 that would meet this claim, in your opinion.
13 If a device is being shipped and it has an
14 array of bipolar radiofrequency electrodes, none
15 of those electrodes are activated, correct?
16 A I think what you're asking is when it's in
17 the box is current passing from the device into
18 the body. So no.
19 Q And so how would you know if that device
20 has an array of multiple bipolar radiofrequency
21 electrodes?
22 A So, for example, we can look at Figure 8F,

1 which is, actually, right there on Page 15. So --
2 or in this case you can also look at Figure 8G,
3 but if you look at Figure 8F, you can see that
4 there is a device and the -- the label there 252
5 is indicating the electrodes. And so in -- and
6 so -- you can see that some of those electrodes
7 have a positive next to it and some of those
8 electrodes have a negative next to it. So a
9 positive and electrode together forms a -- a
10 bipole. And so in that case, for example in
11 Figure 8F, you could see that that device has
12 multiple pairs of bipolar radiofrequency
13 electrodes because there are multiple pluses and
14 minuses.
15 Q So that's how you would know, is if it has
16 multiple pluses or minuses?
17 ATTORNEY BRIGGS: Objection to form.
18 A That's -- what I explained is why
19 Figure 8F specifically has multiple pairs.
20 Q We talked about how Figure 8F also can be
21 activated so you have a single pair active at a
22 single time, correct?

1 A My understanding of what is shown in
2 Figure 8F as described in the patent is that a
3 single pair can be activated independently.
4 Q And so in your opinion, does that still
5 constitute an array of multiple pairs of bipolar
6 radiofrequency electrodes?
7 ATTORNEY BRIGGS: Objection to form.
8 A Whether figure -- whether Figure 8F --
9 Figure 8F, yes, is an array of multiple pairs of
10 bipolar radiofrequency electrodes.
11 Q Even when a single pair is activated
12 independently from other pairs, so if you activate
13 one pair at a time, it still constitutes an array
14 of multiple pairs of bipolar radiofrequency
15 electrodes?
16 ATTORNEY BRIGGS: Objection to form.
17 A Figure 8F shows an array of multiple pairs
18 of bipolar frequency radio electrodes and a
19 specification. And my understanding of them do
20 describe that a single pair can be activated
21 independently.
22 ATTORNEY COHEN: Okay. Why don't we take

1 a break for lunch.
2 ATTORNEY BRIGGS: Okay.
3 (Luncheon recess.)
4 BY ATTORNEY COHEN:
5 Q Welcome back, Dr. Bikson.
6 During the break did you discuss the
7 substance of your testimony with counsel?
8 A No.
9 Q Have you discussed the substance of your
10 testimony with counsel on any of the breaks?
11 A No.
12 Q I want to turn back to Stern which you
13 should have in front of you, the Stern patent.
14 A Okay.
15 Q If you go to Column 12, Line 25. And do
16 you see the paragraph that begins, "in specific
17 instances"?
18 And actually, let's begin above that,
19 let's start with the line at Column 12, Line 7,
20 "the delivery of power can be improved."
21 Do you see that?
22 A Yeah, let me read that, please.

1 Q Yeah.
2 A (Document review.)
3 Q I'm really focused on the second half of
4 that paragraph, starting around Line 18, so not
5 Figure 5 or 13. I saw you flipping through.
6 A Okay.
7 Q So from around Line 18 to like Line 37.
8 A (Document review.)
9 Q Okay. So here it says, at the bottom of
10 that first paragraph, "when a bipolar operation
11 occurs, the flow of the current return is a path
12 between selected pairs of the electrodes. A
13 switching arrangement to be described determines
14 such pairs of electrodes or combinations of
15 electrodes between which the current flows in the
16 return path."
17 Do you see that?
18 A I do.
19 Q So here it is talking about how it does
20 have pairs or more than one pair of electrodes,
21 correct?
22 ATTORNEY BRIGGS: Objection. Form.

1 A My understanding of this is that this is
2 referring to -- to the figures I was looking at,
3 Figure 5 and Figure -- Figure 5, for example.
4 And it is referring to -- I'm sorry -- if
5 you can just repeat the question?
6 Q Sure. My question is about where it
7 says, "When a bipolar operation occurs, the flow
8 of the current return is a path between selected
9 pairs of the electrodes. A switching arrangement
10 to be described determines such pairs of
11 electrodes or combinations of electrodes between
12 which the current flows."
13 My question was: Here it is talking about
14 how it has pairs or more than one pair of
15 electrodes, correct?
16 ATTORNEY BRIGGS: Objection. Form.
17 A I believe it's describing selected as
18 indicated, selected pairs of electrodes. What
19 Stern is describing here is selecting one pair of
20 bipolar electrodes and then possibly selecting
21 separately another pair of bipolar electrodes.
22 Q Okay.

1 A And the selection is based on the switches
2 that are shown, for example, in Figure 5.
3 Q Okay. And it's your opinion if we go down
4 to around Line 29 where it says, "In such
5 instances, if particular pairs of electrodes were
6 chosen in a bipolar arrangement to receive RF
7 energy, the return path could be controlled
8 selectively by a physician."
9 Do you see that?
10 A I do.
11 Q So that, in your opinion, is also saying
12 you select one pair and then a different pair?
13 ATTORNEY BRIGGS: Objection to form.
14 A It's describing there a pair of
15 electrodes. So that would be two electrodes. Two
16 electrodes form a single bipolar. And what he's
17 describing is that you select bipolar, and that
18 the selection could be controlled by a physician.
19 Q And it says in Line 29, because you just
20 said, it says "selecting a pair."
21 In line 29, it does say "in such instances
22 if particular pairs of electrodes were chosen."

1 So it's saying more than one pair in that line,
2 correct?
3 A I see that.
4 Q And pairs means more than one pair,
5 correct?
6 A Pairs means more than one pair.
7 Q Okay. Let's set this aside for now. And
8 go back to your '271 declaration. Actually, one
9 quick -- let's quickly turn to the Foundry
10 declarations. This will be quick just to confirm
11 if you go to -- give me one second.
12 In the 077IPR that is the declaration
13 offered in IPR2024-00669 related to patent number
14 11,679,077.
15 A I have that in front of me.
16 Q Okay. And in this IPR at Page 36, you
17 also offer the opinion that Stern does not
18 disclose multiple pairs of bipolar electrodes,
19 correct?
20 A So I disagreed with the petitioner that
21 Stern teaches the multiple pairs of bipolar
22 radiofrequency electrodes.

1 Q And for the same reasons we've been
2 discussing, which is that Stern does not disclose
3 delivering energy to two pairs of electrodes at
4 the same time?
5 A If Stern had disclosed delivering energy
6 to multiple pairs of greater frequency electrodes
7 at the same time, then that would be delivery of
8 energy to multiple pairs.
9 Q Okay. So the opinions that you have in
10 this specific section of the '077 declaration are
11 the same as what we've been discussing about your
12 opinion as to whether Stern has multiple pairs of
13 bipolar electrodes, correct?
14 A If I understand your question, I think my
15 opinions about Stern are generally consistent
16 across the different depositions, though I might
17 be talking about specifically different claims or
18 claim elements.
19 Q Okay. And I think I've been -- we've been
20 talking about your opinion that Stern does not
21 have multiple pairs of bipolar electrodes.
22 My question is: The reason you give in

1 the Aerin declarations is the same reason that you
2 give in the '077 declaration, correct?
3 A So I mean to answer that very precisely.
4 I need to compare the back-and-forth, but I do
5 believe that generally I use at least some of the
6 same rationale since it is the same -- it is the
7 same patent we're discussing.
8 Q Okay. You can set that aside for now.
9 Let's go back to the '271 declaration.
10 Okay. I'm going to ask you about your
11 opinions about the two rows of bipolar electrode
12 pairs. Okay?
13 A Okay.
14 Q So you -- you've been talking about your
15 opinion that Stern does not have bipolar electrode
16 pairs. You also have the opinion which starts on
17 Page 27 that Stern does not close -- disclose two
18 rows of bipolar electrode pairs, correct?
19 A Stern does not teach two rows of bipolar
20 electrode pairs.
21 Q Okay. And it's your opinion that Stern
22 does not disclose two rows of bipolar electrode

1 pairs because the claims require a row that
2 includes more than one bipolar electrode pair; is
3 that correct?
4 ATTORNEY BRIGGS: Objection. Form.
5 A I understand that the claim term "bipolar
6 electrode pairs" is plural, therefore it requires
7 multiple pairs.
8 Q It requires -- sorry. In your opinion,
9 the claim term "two rows of bipolar electrode
10 pairs" requires two rows where in each row there
11 is -- there are multiple pairs of bipolar
12 electrodes; is that correct?
13 ATTORNEY BRIGGS: Objection. Form.
14 A I'm sorry. Could you repeat the question?
15 Q Sure. In your opinion, the claim term
16 "two rows of bipolar electrode pairs" requires two
17 rows where in each row there are multiple pairs of
18 bipolar electrodes; is that correct?
19 ATTORNEY BRIGGS: Same objection.
20 A My understanding is the claim requires two
21 rows and each row has multiple bipolar electrode
22 pairs.

1 Q When you say, "my understanding," is that
2 understanding that's been provided to you from
3 counsel?
4 ATTORNEY BRIGGS: Objection to form.
5 A I was referring to the analysis I did
6 of -- of Stern.
7 Q Okay. So it is your opinion that the
8 claim term "two rows of bipolar electrode pairs"
9 requires two rows where in each row there are
10 multiple pairs of bipolar electrodes; is that
11 correct?
12 ATTORNEY BRIGGS: Objection. Form.
13 A And again, I was -- I'm not a lawyer, so I
14 wasn't sure if there is a distinction between
15 saying my understanding or my opinion, but it is
16 my opinion that the claim element 1A is describing
17 two rows, and each row has multiple bipolar
18 electrode pairs.
19 Q Okay. And on Page 29 you refer to the
20 '271 patent. In Paragraph 77 you say, "My opinion
21 is consistent with the '271 patent's teachings as
22 illustrated below."

1 And then on Page 30, you have annotated
2 figures of Figure 8F and 8G, correct?
3 A I see that.
4 Q Okay. And in Figure 8F on Page 30, you
5 draw the two rows going down the length of the
6 treatment element, correct?
7 ATTORNEY BRIGGS: Objection. Form.
8 A In Figure 8F, I've marked Row 1 and Row 2
9 on the device.
10 Q And the rows are going along the length of
11 that treatment element, correct?
12 A The rows are going down the long axis,
13 yes.
14 Q Okay. And similarly in Figure 8G, you
15 draw -- annotate one row going down the length of
16 treatment element, correct?
17 A In Figure 8G I have marked one row going
18 down the length of the device.
19 Q Okay. So it's your opinion that in
20 Figure 8F -- can you give me the --
21 ATTORNEY COHEN: I'm going to mark this as
22 Exhibit B.

1 (Bikson Exhibit B, Figure 8F From the '271
2 Patent, marked for identification.)
3 BY ATTORNEY COHEN:
4 Q All right. What's been marked as Exhibit
5 Bikson B is Figure 8F from the '271 patent. And
6 if you want, you can take a look at the '271
7 patent, which is also in front of you, to confirm
8 that this is an accurate depiction of Figure 8F
9 taken from the patent.
10 A Okay.
11 Q Can you please circle for me where the
12 pairs of electrodes are on figure 8F.
13 A (Witness complies.)
14 So I circled one example of how you can
15 form pairs.
16 Q Okay. And that --
17 A There are other ways you can form pairs,
18 however.
19 Q What are some of the other ways you can
20 form pairs?
21 A By connecting different combinations of
22 positive and negative electrodes in the same row.

1 Q Okay. In the same row?
2 A Yes.
3 Q And by "row," you are referring to the row
4 that is going along the length of the treatment
5 element, correct?
6 A That was the row I was referring to, yes.
7 Q Could you draw a line on that figure to
8 show kind of through the electrodes where the row
9 is that you're referring to?
10 A Sure.
11 (Witness complies.)
12 Q So that's Row 1?
13 A That is corresponding to Row 1, yes.
14 Q Could you label it Row 1.
15 And could you also show the second row.
16 A (Witness complies.)
17 Q And could you label that Row 2?
18 A (Witness complies.)
19 Q So in your opinion, the '271 patent is
20 disclosing that you have multiple pairs along the
21 length of treatment element -- the treatment
22 element that's shown in Figure 8F; is that

1 correct?
2 ATTORNEY BRIGGS: Objection to form.
3 A The -- the Figure 8F, Figure 8F does
4 depict treatment elements with two rows of five
5 electrodes -- and I'm sorry. Can you repeat the
6 question?
7 Q In your opinion, the '271 patent in
8 Figure 8F is disclosing that you have multiple
9 pairs along the length of the treatment element
10 within the rows that you've labeled, correct?
11 ATTORNEY BRIGGS: Objection to form.
12 A I've labelled two rows, and each one of
13 those rows has multiple bipolar pairs.
14 Q Okay. Can you take the '271 patent itself
15 and turn to Column 23 that we were looking at
16 before.
17 And we were looking at this section
18 earlier. I'm talking starting around Line 54. We
19 were looking at this section, but feel free if you
20 want to review it again.
21 My question is: The -- the patent says at
22 line 40, "as shown in Figure 8F in some

1 embodiments, an array of electrodes comprising
2 one, two, or many pairs are located on a treatment
3 element."
4 A I'm sorry, what line are you at?
5 Q That was Line 40. Do you see that?
6 A Oh, Line 40. Yes.
7 Q Okay. And then in Line 54 it
8 says, "Figure 8G illustrates another embodiment of
9 a treatment element comprising one, two, or many
10 pairs. As opposed to Figure 8F where the pairs of
11 electrodes are arranged side by side, the
12 embodiment of Figure 8G arranges the pairs of
13 electrodes along the length of the treatment
14 element," correct?
15 A Okay.
16 Q Do you see that?
17 A Yes.
18 Q So isn't that saying that instead of the
19 pairs being formed as you've labeled, the pairs
20 are actually across the short axis of the
21 treatment element in contrast to Figure 8G?
22 ATTORNEY BRIGGS: Objection. Form.

A Could you repeat the question?
Q Sure. So it says, "As opposed to Figure 8F" --
A Yes.
Q -- "where the pairs are arranged side by side, the embodiment of 8G arranges the pairs along the length of the treatment element," correct?
A Okay.
Q So in Figure 8F, what that is saying is that in contrast to what you've labeled as the pairs in Figure 8F, the pairs are actually side by side?
A That's not my opinion.
Q What is that saying?
A I think it's -- I'm just reading it just according to the -- sort of what it's saying here where in Figure 8F you have two rows and the pairs are arranged -- there is pairs in one row and there is pairs in another row, but if you look at Figure 8G --
Q You have -- if you move your one tab and

1 go to Page 30.
2 A If you look at the -- what's shown in
3 Figure 8F is not like what's shown in Figure 8G.
4 In Figure 8F I've marked that there are two rows.
5 I've marked that as sort of Row 1 and Row 2 in my
6 report. And in Figure 8G I marked Row 1, and that
7 is the unique role.
8 And so what is being described here is
9 consistent with my annotation.
10 Q Okay. And what it says here is that
11 "Figure 8G arranges the pairs along the length of
12 the treatment element," correct?
13 A Yes.
14 Q And then it says, "that is opposed to
15 Figure 8F where the pairs are side by side,"
16 correct?
17 A It says, "as opposed to Figure 8, the
18 pairs are side by side." Right. And that is
19 referring to the two rows.
20 Q Well, in your embodiment, what you've
21 labeled Figure 8F, the pairs are still along the
22 length of the treatment element, correct?

1 A But there are two rows.
2 Q Okay.
3 A And --
4 Q I'm sorry?
5 A There are two rows in 8F, but in 8G there
6 is one row.
7 Q Okay. And in your opinion, it would be
8 inaccurate to say that electricity is going from
9 one electrode in Row 1 to one electrode in Row 2,
10 correct?
11 ATTORNEY BRIGGS: Objection to form.
12 A That would depend.
13 Q In your opinion, does the '271 patent
14 disclose delivering energy from Row 1 to an
15 electrode in Row 2?
16 ATTORNEY BRIGGS: Objection. Form.
17 A So what I was specifically commenting on
18 our discussion so far was the arrangement of
19 bipole electrodes. I think you're now asking me a
20 separate question which more relates to how
21 current might be flowing through the tissue, which
22 is a little bit different. We can certainly talk

1 about that, but that's like a different
2 consideration.
3 Q I want to talk about the bipolar
4 electrodes. Can you have a bipolar electrode pair
5 formed across Row 1 and Row 2?
6 ATTORNEY BRIGGS: Objection to form.
7 A I'm sorry. Can you clarify that, please?
8 Q Sure. So if we just look at the top two
9 electrodes at the distal-most point of this
10 treatment element.
11 A So Figure 8F.
12 Q Figure 8F.
13 A And looking at the -- the most distal
14 electrical electrode labeled plus and the most
15 distal labeled negative.
16 Q Correct.
17 A I see that.
18 Q Could that be a bipolar electrode pair?
19 A That could be a bipolar electrode pair.
20 Q Okay. And then the second two electrodes
21 that have a plus and a minus could be another
22 bipolar electrode pair, correct?

A You could define those as another bipolar electrode pair, but that's not my understanding of the '271.

Q Okay. Can you turn to the abstract of the '271?

A Yes.

Q And the last sentence says, "The radiofrequency delivery member includes two rows of protruding electrodes disposed on a tissue contact surface. And the device is configured to deliver radiofrequency energy from one row of electrodes to the other row of electrodes."

Do you see that?

A I see that.

Q And so that, based on the rows that you have drawn, would involve delivering energy from Row 1 into Row 2, correct?

A So when in my analysis of Figure 8F, I understood that the specifications described at the bipoles are arranged inside of the row.

Q Did you ignore this sentence in the abstract?

1 ATTORNEY BRIGGS: Objection to form.
2 A I don't -- I considered the entire patent
3 when I -- when I did my analysis, but I also -- as
4 I mentioned earlier, I think it's important when
5 analyzing, generally, these type of devices to --
6 you know, you can talk about stimulation dose and
7 bipolar electrical configurations, and you can
8 also talk about energy flow patterns. So I think
9 it's important to be clear what we're talking
10 about, you know, when discussing how these devices
11 work.
12 Q Okay. In this sentence it is saying you
13 deliver radiofrequency energy from -- from one row
14 of electrodes to the other row of electrodes.
15 Do you see that?
16 A I see that.
17 Q So that is disclosing forming a pair
18 across the two rows, correct, because you were
19 delivering energy from one row to the other row?
20 ATTORNEY BRIGGS: Is that a question?
21 ATTORNEY COHEN: Yes.
22 A Can you repeat the question?

1 Q This sentence is disclosing delivering
2 energy from one row across the device to the other
3 row and forming a bipolar pair that way, correct?
4 A It describes delivering one row of
5 electrodes to the other row of electrodes, but I
6 don't see where -- the other thing you're
7 mentioning about the bipoles.
8 Q Okay. So you -- so this to you is
9 disclosing you can deliver energy from one row to
10 another row, but that they are not formed in
11 bipolar pairs?
12 ATTORNEY BRIGGS: Objection to form.
13 A I'm just not seeing any mention of bipole
14 pairs in this sentence.
15 Q Do you want to read the rest of the
16 paragraph? It does talk about bipolar
17 radiofrequency delivery.
18 A I see that.
19 Q And so in your opinion, it's talking about
20 a bipolar radiofrequency delivery member, bipolar
21 energy delivery requires a pair of electrodes,
22 correct?

1 A A bipolar would indicate a pair of
2 electrodes. That's correct.
3 Q And it involves delivering energy from one
4 electrode to another, correct?
5 A It's -- you can describe bipolar energy
6 delivery as delivery energy -- as delivering
7 energy from one electrode to the other.
8 Q Okay. So that last sentence is saying,
9 you can deliver energy from one row to another row
10 of electrodes?
11 A Yes.
12 Q And so isn't that disclosing a bipolar
13 pair across the rows of electrodes?
14 A That is not disclosing that.
15 Q What is that disclosing?
16 A It's disclosing that you can have a device
17 where you have energy from one row to the other
18 row.
19 Q Okay. And so where are the bipolar pairs
20 in that?
21 A That sentence doesn't specify what the --
22 how the bipolar pairs are being positioned.

1 Q In your view are there bipolar pairs in
2 the devices being described in the abstract?
3 A The device -- there are various
4 embodiments, but the abstract indicates that an
5 embodiment can include bipolar radiofrequency
6 delivery.
7 Q Okay. And so when energy is being
8 delivered from one electrode to another electrode,
9 we talk about how that's bipolar energy delivery,
10 correct?
11 ATTORNEY BRIGGS: Objection. Form.
12 A When you have bipolar electrodes and you
13 are delivering energy from one electrode to the
14 other electrode, I think that's correct to
15 describe that it's bipolar energy delivery.
16 Q Okay. And so when it says, "Deliver
17 energy from one row of electrodes to the other row
18 of electrodes," isn't that involving bipolar
19 energy delivery?
20 A The -- the discussion of how energy flows
21 and the discussion of how the dose is configured,
22 for example using bipolar electrode pairs, are not

1 the same. These are not -- these are not the same
2 thing. So when you configure a device to operate
3 in a certain way, you can configure the
4 electrodes. For example, you can configure the
5 electrodes to be a bipolar or you can configure
6 multiple bipoles as well.
7 That is separate from a discussion of how
8 the energy then flows through the tissue --
9 Q Okay.
10 A -- which is the resulting pattern.
11 Q Right. This isn't talking about energy
12 flow through tissue. This is saying the device --
13 A Yes.
14 Q -- is configured to deliver radiofrequency
15 energy from one row of electrodes to the other row
16 of electrodes, correct?
17 A That's what it says, yes.
18 Q So the device is configured to deliver
19 energy -- we're not talking about the tissue,
20 we're talking about the device being configured to
21 deliver energy from one row of electrodes to the
22 other row of electrodes, correct?

A Yes.
Q And so that is talking about bipolar energy delivery from one row to another, correct?
A No.
Q Why not?
A Bipolar -- when we talk about bipolar energy delivery, we're specifically referring to the -- the device dose. For example, what is shown in Figure 8F, where you have multiple bipoles. This last sentence is talking about the energy flow itself, which I think should be understood in the context of -- of this patent as energy through the tissue.
Q Even though it's talking about the device being configured to deliver energy from one row to another, correct?
A Yeah, this needs to be -- my understanding of the sentence is that it is describing the energy being delivered across the tissue.
Q You mean it was talking about the device being configured to deliver from one row to another?

A I'm sorry. Is that a question? I'm sorry.

Q We talked earlier --

A Yes.

Q About how in Figure 8F, the '271 patent discusses that you can independently activate the pairs of electrodes, correct?

A I remember that -- us discussing that.

Q Okay. So if you were to independently activate the different pairs, you would not deliver energy, in your opinion, across the two rows of electrodes, correct?

ATTORNEY BRIGGS: Objection. Form.

Q Because you'd only have one pair active in each row at a given time, correct?

ATTORNEY BRIGGS: Objection. Form.

A Just so I understand the hypothetical here, you're suggesting to look at Figure 8F and you're suggesting to activate just one of the -- apply energy through one of the indicated bipoles?

Q Correct.

A Okay. And then the question is in that --

1 so then in that hypothetical your question is --
2 Q Well, which is an embodiment that we've
3 discussed in this patent. It talks about
4 independent activation and control of each bipolar
5 pair, correct?
6 A We've discussed that, yes.
7 Q Okay. And so when each bipolar pair is
8 being independently activated and you're
9 delivering energy through one bipolar pair, energy
10 will not flow from one row to another row,
11 correct?
12 ATTORNEY BRIGGS: Objection to form.
13 A I think that would depend on the
14 configuration.
15 Q Well, if the second row is inactivated,
16 where is the -- the energy is not going to flow to
17 a return electrode on the second row, correct?
18 ATTORNEY BRIGGS: Objection. Form.
19 A It would not, based on my understanding of
20 the hypothetical, the energy would take a
21 particular pattern. That pattern may overlap
22 tissue under Row 2 and may overlap tissue under

1 Row 1.
2 Q But it wouldn't return to an electrode on
3 Row 2, because that electrode would not be
4 activated, correct?
5 A If I understand the hypothetical, if you
6 were only activating a -- a single -- only
7 applying energy to a selected single bipole, for
8 example, in Row 2, so that energy was being passed
9 in and out of two electrodes, and then you would
10 not necessarily have current passing in and out of
11 other electrodes.
12 Q Like electrodes in Row 1?
13 ATTORNEY BRIGGS: Objection. Form.
14 A You would not necessarily have current
15 flowing in and out of the electrodes in Row 1. It
16 would, of course, depend on the details.
17 Q Okay.
18 THE WITNESS: Can I ask for a restroom
19 break whenever is good?
20 ATTORNEY COHEN: Sure.
21 ATTORNEY BRIGGS: Yeah, five minutes?
22 THE WITNESS: Yeah.

(Recess.)

BY ATTORNEY COHEN:

Q Welcome back, Dr. Bikson.

So before we left we were talking about the bipolar electrode pairs that are disclosed in the '271 patent.

Do you recall that?

A Yes.

Q Okay. And earlier we had discussed that energy can flow from this negative electrode to this positive electrode?

ATTORNEY BRIGGS: Objection. Form.

A Just so I can see where you're pointing at, please?

Q I'm talking about Figure 8F.

A Yes.

Q Energy can flow -- this is a negative electrode and this is a positive, correct?

A Yes.

ATTORNEY BRIGGS: Counsel, we can't tell on the record which ones you're pointing to.

Q Okay. Figure 8F, I'm referring to the

1 distal-most, top-most two electrodes that are side
2 by side in Figure 8F. Okay.
3 Do you have that in mind?
4 A Yes.
5 Q One has a negative next to it and one has
6 a positive, correct?
7 A Yes.
8 Q And they are both labelled with element
9 number 252, correct?
10 A I see that.
11 Q Those could deliver energy from one to the
12 other, correct? Let me -- those electrodes could
13 be configured to deliver energy from one electrode
14 to the other electrode, correct?
15 A You could configure the device in
16 Figure 8F so that energy is delivered from --
17 between the two electrodes that you indicate.
18 Q Okay. Could you circle that and how that
19 energy would flow on that --
20 ATTORNEY BRIGGS: Is this a different
21 exhibit?
22 ATTORNEY COHEN: Yeah, we'll do this as

1 Exhibit C. Let's label this as Exhibit c.
2 (Bikson Exhibit C, Figure 8F, Element 252,
3 marked for identification.)
4 A Can you just clarify what you'd like me to
5 do, please?
6 Q Sure. So we were talking about the two
7 electrodes that are labelled with Element No. 252.
8 And you said you could configure the device so
9 energy is delivered between the two electrodes.
10 So I was hoping you could circle the two
11 electrodes that we've been discussing.
12 A Okay. I'm circling the two electrodes.
13 Q Okay. And we were also talking about,
14 earlier, how you could configure the next two
15 electrodes which are labeled with opposing
16 positive and negative symbols to deliver energy
17 from one electrode to the next, the second in that
18 row, correct?
19 ATTORNEY BRIGGS: Objection to form.
20 A I remember our discussion and -- on that
21 topic, yes.
22 Q And do you agree you could configure

energy to be delivered from an electrode in one row to the electrode in the other row?

A You could hypothetically configure the device to deliver energy from one row to -- I'm sorry. Can you repeat the question?

Q Sure. Do you agree you can configure energy to be delivered from an electrode in one row to the electrode in the other row?

A Yes.

Q Okay. Could you circle what that pair would be?

A I already circled the pair.

Q I guess my question was about the second electrodes in that row, the ones that are not circled but are next to the ones that are circled.

Do you also agree you could configure energy to be delivered from an electrode in one row to the electrode in the other row for that second set of electrodes?

A I think what you're asking is -- I'm going to circle the electrodes I think you're referring to.

1 Q Okay.
2 A So I've circled the electrodes I think
3 you're referring to.
4 Q Okay. Yeah.
5 And those two sets of electrodes could
6 also be configured as bipolar electrode pairs,
7 correct?
8 A You could configure these two electrodes
9 to function as a bipolar electrode pair.
10 ATTORNEY BRIGGS: Counsel, can we put
11 maybe a little bit more labels on this so we know
12 which row we're talking about here? It's kind of
13 hard for me.
14 Q Sure. Can you label on Figure 8F what you
15 have labeled as Row 1 in your report?
16 A So similar to what I had done earlier? Do
17 you want me to write in Row 1?
18 Q Can you also label Row 2?
19 A As I had done earlier.
20 Q Yes. You can set that aside.
21 (An off-the-record discussion was held at
22 this time.)

1 BY ATTORNEY COHEN:
2 Q Now, the '271 patent, if you go to the
3 claims at the back of the patent. And I see you
4 have your declaration opened to Claim 1, correct?
5 A I do.
6 Q Okay. So as we were talking about
7 earlier, Claim 1 is a method for treating a nasal
8 airway to reduce mucous production.
9 Do you recall that discussion?
10 A I believe so.
11 Q And as we were discussing, you yourself
12 would not perform a method for treating a nasal
13 airway to reduce mucous production, correct?
14 A I would not perform a medical procedure.
15 Q And you don't know which doctors and what
16 specialties they have that would perform a method
17 for treating a nasal airway to reduce mucous
18 production that follows the steps that are
19 claimed, correct?
20 ATTORNEY BRIGGS: Objection to form.
21 A I don't have an understanding of the
22 regulations that pertain to different medical

1 specialties as may relate to practicing the claim.
2 Q Okay. If you turn to the next page, the,
3 like, last page in the '271 patent, and you see
4 that there are a number of other claims, these --
5 every claim in the '271 patent depends from
6 Claim 1, correct?
7 A I understand that.
8 Q And these are all method claims, correct?
9 A I see that they're all indicated as a
10 method.
11 Q And you've also offered opinions on Claim
12 11 -- Claims 11 and Claim 16, correct?
13 A I have.
14 Q And if you look back at the patent, if you
15 look at Claim 11, this involves, "before removing
16 the treatment element from the nasal airway,
17 repositioning the treatment element to contact a
18 different portion of nasal mucosa and applying
19 radiofrequency energy with the bipolar electrode
20 pairs through the different portion of nasal
21 mucosa to a different portion of target tissue for
22 the amount of time to heat the different portion

1 of target tissue."
2 Do you see that?
3 A I do.
4 Q And you would not perform this method of
5 repositioning the treatment element to treat a
6 different portion of nasal mucosa, correct?
7 A I wouldn't perform any medical procedure,
8 as I understand it, associated with these claims.
9 Q Okay. Have you ever seen a medical
10 procedure performed that involves the application
11 of radiofrequency energy through nasal mucosa?
12 A I don't recall.
13 Q Have you ever studied medical procedures
14 that involve the application of radiofrequency
15 energy through nasal mucosa?
16 A I have.
17 Q Have you ever studied medical procedures
18 that involve the application of radiofrequency
19 energy through nasal mucosa that are intended to
20 ablate tissue?
21 A I have.
22 Q Which ones?

1 A What do you mean by, "which ones"?
2 Q Let me strike that.
3 Before working on this case, did you ever
4 study any medical procedures that involve the
5 application of radiofrequency energy through nasal
6 mucosa that are intended to ablate tissue?
7 A I don't recall especially focusing on
8 those types of procedures.
9 Q Okay. And then "Claim 16 requires the
10 method of Claim 1 further comprising bending a
11 shaft of the nasal airway treatment device before
12 contacting the treatment element with the nasal
13 mucosa."
14 Do you see that?
15 A I do.
16 Q And similar to the other claims, you would
17 not perform this step of bending a shaft of the
18 nasal airway treatment device before contacting
19 the treatment element with nasal mucosa, correct?
20 A I would not perform that step as part of a
21 medical procedure.
22 Q Okay. You can set the '271 patent aside

1 for now.
2 Okay. Going back to your '271
3 declaration, on Page 33 you offer an opinion that
4 petitioners had failed to show that a POSITA would
5 have been motivated to combine Edwards 535 with
6 Stern.
7 Do you see that?
8 A I do.
9 Q And here you're specifically addressing
10 whether a POSITA would have been motivated to
11 combine Edwards 535 with Stern's electrode
12 arrangement, correct?
13 ATTORNEY BRIGGS: Objection. Form.
14 A I -- I address petitioner's arguments on
15 whether a POSITA would have been motivated to
16 combine Edwards 535 with Stern.
17 Q And you're addressing specifically Stern's
18 electrode arrangement, correct?
19 ATTORNEY BRIGGS: Objection. Form.
20 A The -- the petitioner argues that a POSITA
21 would have combined electrode -- combined Edwards
22 535 with Stern's electrode arrangement and I

1 address that.
2 Q Okay. And the first point you raise is
3 that, in your opinion, "Edwards 535 does not
4 incorporate the Baker application in its
5 entirety."
6 If you go to paragraph 87 of your
7 declaration, do you see that?
8 A Yes.
9 Q What is your understanding of what is
10 required for a patent to incorporate another
11 reference in its entirety?
12 A So, of course, I'm not a lawyer, so I just
13 want to qualify that. And so my understanding of
14 this does depend on things that I was, you know,
15 taught by counsel.
16 My understanding is that -- and, again,
17 I'm not a lawyer, but my understanding is that a
18 reference can be incorporated either in its
19 entirety or it might also be incorporated not in
20 its entirety. And my understanding is that
21 Edwards, in the manner that it referenced the
22 Baker application, did not incorporate it in its

1 entirety. For one thing, Edwards does not say
2 that it incorporates the Baker application in its
3 entirety.
4 Also the way in which Edwards references
5 Baker was very specific. As I describe in my
6 report, Edwards is talking about an expandible
7 porous membrane that is permeable to an
8 electrolyte. And I believe that's the only point
9 where Baker is mentioned as describing a similar
10 porous surface.
11 So that was my understanding of the extent
12 that the Baker was incorporated by Edwards.
13 Q Is it your understanding that any
14 particular wording needs to be included for a
15 reference to be incorporated?
16 ATTORNEY BRIGGS: Objection. Form.
17 A To be incorporated in its entirety or to
18 be incorporated?
19 Q To be incorporated in its entirety.
20 A Yeah, I'm not a lawyer, so I can't comment
21 on the exact phrasing you would need.
22 Q Okay. So you don't know what sort of

1 phrasing you would need to incorporate Baker into
2 its entirety into Edwards, correct?
3 A I can speculate, if you want me to
4 speculate.
5 Q I don't -- I'm just asking, you don't know
6 what phrasing you would need to incorporate Baker
7 in its entirety into Edwards, correct?
8 A I don't know from a legal standpoint what
9 would be the standard for the phrasing you would
10 need to use.
11 Q Okay. Is it your understanding that Baker
12 is only relevant to the issues in this case if it
13 is incorporated by reference in its entirety into
14 Edwards?
15 ATTORNEY BRIGGS: Objection. Form.
16 A Can you repeat the question?
17 Q I said, is it your understanding that
18 Baker is only relevant to the issues in this case
19 if it is incorporated by reference in its entirety
20 into Edwards?
21 ATTORNEY BRIGGS: Same objection.
22 A I didn't analyze that.

1 Q Okay. Have you designed devices that have
2 two rows of bipolar electrode pairs previously?
3 A I can't recall specifically.
4 Q You've worked with devices that involve an
5 array of electrodes being applied on the outside
6 of a patient's head, correct?
7 A Yes.
8 Q And in those devices, are there rows of
9 electrodes?
10 A In some embodiments of those devices there
11 are rows of electrodes.
12 Q In some embodiment of those devices, are
13 the electrodes bipolar?
14 A Yes.
15 Q And in some embodiments of those devices,
16 are there bipolar electrode pairs -- are there
17 multiple rows of bipolar electrode pairs?
18 A I don't recall specifically.
19 Q Why -- why do you arrange the -- strike
20 that.
21 In the devices we've been discussing that
22 involve an array of electrodes positioned on the

1 outside of a patient's head where there are rows
2 of electrodes and some are bipolar, why do you
3 arrange electrodes in that manner?
4 ATTORNEY BRIGGS: Objection. Form.
5 A So to understand the question, you're
6 talking about -- you're asking about a device that
7 has multiple rows? And you're asking when those
8 rows have a bipolar electrode in them? Was that
9 your question?
10 Q I was talking about the devices we've been
11 discussing where you said in some embodiments of
12 the devices that involve an array of electrodes on
13 the outside of a patient's head, you will have
14 rows and you will also have bipolar electrode
15 pairs, correct?
16 ATTORNEY BRIGGS: Objection. Form.
17 A Yes, in devices that I worked on that are
18 placed on the person's head, some of those devices
19 can have rows of electrodes. And in some cases
20 you can have bipole electrode pairs.
21 Q And why would you have rows and bipolar
22 electrode pairs in those devices?

1 ATTORNEY BRIGGS: Objection. Form.
2 A So as I understand your question, it's --
3 it's rather general, but I can get as specific as
4 you want. Generally, when you are deciding how
5 many electrodes to use, where to position them on
6 the head, and also how to energize them, you're
7 doing that with a consideration of several
8 factors, but one of the major factors is the
9 energy pattern as it would be delivered into the
10 head. Typically, there would be regions that are
11 your target regions, but also there would be
12 regions which are not your target.
13 And so the general approach -- very
14 generally, I'm not sure if I'm answering your
15 specific question, but the general approach would
16 be the dose, the electrode montage, would be
17 guided by those factors, but maybe I can answer
18 something more specific.
19 Q Outside of the devices I've been talking
20 about that are applied on the outside of your
21 head, have you worked on devices that involve
22 multiple bipolar pairs that deliver energy inside

1 the body?
2 ATTORNEY BRIGGS: Objection. Form.
3 A I have worked on devices that deliver
4 energy inside of the body that can include
5 multiple pairs of bipoles.
6 Q And in any of those devices, do you have
7 multiple rows of bipolar electrode pairs?
8 A I don't recall exactly.
9 Q Can you go to paragraph 89 in your
10 declaration of -- for the '271 patent that we've
11 been talking about?
12 A Yes.
13 Q And so in this paragraph you say you
14 "disagree with petitioner's argument that the
15 proposed combination would have been a mere
16 duplication of parts, correct?
17 (Reporter clarification.)
18 Q Sorry. "That the proposed combination
19 would have been a mere duplication of parts,"
20 correct?
21 A Correct.
22 Q And your opinion here is related to

1 Edwards 535 disclosing a single row of four ring
2 electrodes, correct?
3 A Edwards, yeah, discloses a single row of
4 four ring electrodes.
5 Q Okay. And it's your opinion that Edwards
6 only discloses a single row of four ring
7 electrodes, correct?
8 ATTORNEY BRIGGS: Objection. Form.
9 A I don't remember if Edwards discloses
10 anything else.
11 Q But your opinion here is based on Edwards
12 disclosing a single row of four ring electrodes,
13 correct?
14 A My opinion here is based on Edwards
15 disclosing a single row of four ring electrodes.
16 Q Okay. So is your opinion here limited to
17 the embodiment where Edwards discloses a single
18 row of four ring electrodes?
19 ATTORNEY BRIGGS: Objection to form.
20 A I'm not sure of the question.
21 Q Well, you said you don't remember if
22 Edwards discloses anything other than a single row

1 of four ring electrodes. And so my follow-up
2 question was: Is your opinion in paragraph 89
3 limited to the embodiment that you can recall
4 where Edwards discloses a single row of four-ring
5 electrodes?
6 ATTORNEY BRIGGS: Objection. Form.
7 A I don't think so.
8 Q You only describe an embodiment with a
9 single row of four-ring electrodes in this
10 paragraph, correct?
11 A When I -- when I describe Edwards, I
12 describe Edwards disclosing a single row of four
13 ring electrodes.
14 Q And you say Stern on the other hand
15 discloses five surface electrodes, correct?
16 A I say that, yes.
17 Q Okay. Can you turn to your '318
18 declaration?
19 A I have my 318.
20 Q So we are looking at for the record, the
21 declaration you offered in IPR2024-00278 on patent
22 number 11,033,318.

1 Do you see that?
2 A I have my '318 declaration.
3 Q So we spent some time talking about the
4 opinion you have on an array of multiple pairs of
5 bipolar radiofrequency electrodes. I now want to
6 turn to your opinion on the limitation 1E about
7 multiple radiofrequency output channels. Okay?
8 A Okay. Should I close this?
9 Q Is that the '271 declaration?
10 A Yes.
11 Q Yes. You can for now.
12 Okay. If we go to Page 32, and I guess it
13 starts earlier than that, but you have the -- this
14 starting on Page 26, it's your opinion that Stern
15 does not teach multiple radiofrequency output
16 channels, correct?
17 A I disagree that Stern teaches multiple
18 radiofrequency output channels. Stern teaches, at
19 most, a single radiofrequency output channel.
20 Q Okay. And that's because as you show in
21 paragraph 79, there is one output from the RF
22 generator and one input, correct?

1 ATTORNEY BRIGGS: Objection. Form.
2 A The -- what I'm annotating there is that
3 there is an RF generator, and that RF generator is
4 associated with one radiofrequency output channel.
5 But a channel has two wires.
6 Q Okay. Sorry. A channel has two wires
7 because it has an output and an input?
8 ATTORNEY BRIGGS: Objection to form.
9 A You can -- when -- when I'm describing a
10 channel here, one way to -- because a channel has
11 two wires associated with it, one way to
12 facilitate that explanation is to mark one of the
13 wires as the output and one of the wires as the
14 input, which is what I did on Page 32.
15 Q Is it your opinion that to have multiple
16 radiofrequency output channels, Stern would need
17 to disclose multiple sources of RF energy?
18 ATTORNEY BRIGGS: Objection. Form.
19 A I think that would depend on the details.
20 Q Like what details?
21 A I'm not sure, but you sort of gave a
22 hypothetical, so I would probably want to

1 understand -- you know, look at that full
2 disclosure to understand what we described to
3 answer your question.
4 Q Well, I'm trying to understand your
5 opinion on Stern, because I don't really
6 understand it, if I'm being honest.
7 Have you ever encountered a system that
8 has more than one radiofrequency signal generator?
9 And I'm talking about the part of the system that
10 actually is generating an RF signal?
11 ATTORNEY BRIGGS: Objection. Form.
12 A What do you mean by encountered?
13 Q Have you ever analyzed a device like a
14 generator that has more than one RF signal source?
15 ATTORNEY BRIGGS: Objection. Form.
16 A Do you mean like a physical device?
17 Q Mm-hmm.
18 A I don't recall if I've analyzed a physical
19 device that had multiple RF generators.
20 Q Okay. And I guess within an RF generator,
21 there is going to be a source that is actually
22 generating the RF signal.

1 Do you have that in mind?
2 A The -- so specifically in regards to
3 Stern, which is -- I think what you're asking me
4 about Stern uses the term power source, power
5 supply, voltage source, RF generator, and other
6 terms interchangeably.
7 Q Let's set aside Stern for a moment. I'm
8 asking about your personal experience. Okay.
9 And you designed generators in the past,
10 correct?
11 A Correct.
12 Q And within a generator there is going to
13 be a component that actually is creating the
14 signal that's going to be delivered to tissue,
15 correct?
16 ATTORNEY BRIGGS: Objection to form.
17 Q Setting aside Stern, just talking from
18 your experience in designing generators, within a
19 generator there is going to be some component that
20 actually generates the electrical energy that's
21 delivered to tissue, correct?
22 ATTORNEY BRIGGS: Objection to form.

1 A The generator generates the electrical
2 energy that's delivered to tissue.
3 Q Okay. Could you also call it an
4 oscillator?
5 ATTORNEY BRIGGS: Objection. Form.
6 A Again, it would, of course, depend on the
7 situation, but I think in some situations, you can
8 refer to the generator as an oscillator.
9 Q Now, within an overall, like, console that
10 you might connect a device to, you will have the
11 RF signal generator and you may have other wiring,
12 correct?
13 ATTORNEY BRIGGS: Objection. Form.
14 A So now you're describing that there is an
15 RF generator and you are asking me if that RF
16 generator can have wiring?
17 Q Well, there is the actual signal source
18 within a generator, correct?
19 ATTORNEY BRIGGS: Objection to form.
20 A The generator is the signal source.
21 Q And what sort of wiring exists inside a
22 generator?

1 ATTORNEY BRIGGS: Objection to form.
2 A What kind of wiring exists? I think one
3 kind of wiring, if I understand your question,
4 would be that there are two wires that come out of
5 the generators, as I've marked.
6 Q Have you ever seen a generator that has
7 multiple wires connected to the RF signal source?
8 ATTORNEY BRIGGS: Objection. Form.
9 A A generator that has multiple wires
10 connected... it's difficult to answer your
11 question. You are generally talking about a piece
12 of -- like an electronic system. So the way it's
13 built can be rather complex. So there could be
14 all kinds of wires as part of that system's
15 design, so I'm not sure exactly how to answer your
16 question.
17 Q When -- you've designed devices where
18 electrical energy will be delivered to some
19 electrodes and not others, correct?
20 A Yes.
21 Q How do you typically control the delivery
22 energy in those devices?

1 A Generally, you have a -- a voltage source
2 or it can be called a current source as well. It
3 is almost universally programmable. So you would
4 have different settings that you can set it to.
5 Those settings could include intensity, frequency,
6 it could be other parameters as well. And then
7 you would connect the -- that voltage source would
8 be connected, for example, to two electrodes. And
9 the energy provided by that source would then be
10 delivered to those electrodes. And if those
11 electrodes were placed on the body, then that
12 energy would then be delivered to the body.
13 Q How would you control delivering energy to
14 only one of those two electrodes?
15 ATTORNEY BRIGGS: Objection. Form.
16 A Generally, when you're delivering
17 stimulation, you need at least two electrodes.
18 And the reason is that you need to imagine the
19 currents are going to make a path.
20 So I don't know a situation where you
21 could get away with just one electrode. You
22 really need to have the two electrodes. It's

1 related to the reason why there are two wires
2 coming out of the generator.
3 Q So when you say "coming out of the
4 generator," where are you referring to?
5 A So, for example, in Page 30 of my report
6 I've annotated Figure 15. You have the source
7 which is 228, and there are two wires connected to
8 that voltage source.
9 Q Okay. I guess for the devices we are --
10 right. So that you need the two bipolar
11 electrodes, which I think is what you're saying,
12 you definitely need two.
13 Have you worked with devices where you
14 have four electrodes and you're delivering to
15 two -- energy to two electrodes and not two other
16 electrodes?
17 ATTORNEY BRIGGS: Objection. Form.
18 A If I understand the question, I have
19 worked with devices where there are -- if I
20 understood the question, I've worked with devices
21 where there are two electrodes that are being
22 energized and two other electrodes that are not

1 being energized.
2 Q And in those devices, how are you
3 controlling that the two electrodes are being
4 energized and the two other electrodes are not
5 energized?
6 A That would depend on the device.
7 Q What are some design implementations
8 you've used?
9 A The most simple implementation is that you
10 could look at the two electrodes that are not
11 being energized and they could not be connected to
12 anything.
13 Q How are they not connected to anything?
14 A So you would have an electrode. Perhaps
15 that electrode is on the surface of the body. But
16 there is no wire connected to that electrode.
17 Q Turning back to this output channel idea,
18 you mentioned in any kind of generator, you have
19 a -- a voltage source, right?
20 ATTORNEY BRIGGS: Objection. Form.
21 A Are you referring to something specific in
22 my report?

1 Q Well, I was referring to our discussion
2 earlier. You said that when you're designing a
3 device to deliver electrical energy to the body
4 you're going to need a voltage source or could be
5 a current source, correct?
6 A Correct.
7 Q And coming out of that voltage source, in
8 your opinion, to have multiple output channels, do
9 you need more than two wires?
10 ATTORNEY BRIGGS: Objection. Form.
11 A Can you repeat the question?
12 Q In your opinion, to have multiple output
13 channels do you need more than two wires that
14 connect to a voltage source?
15 ATTORNEY BRIGGS: Same objection.
16 A So a channel consists of two wires. If
17 you have a channel connected to a voltage source,
18 you would have two wires associated with that
19 channel.
20 Q So my question is: There is a claim
21 limitation in the '318 patent that says the
22 device -- if you go to Page 16 -- the device has

1 multiple radiofrequency output channels connected
2 with the multiple pairs of bipolar radiofrequency
3 electrodes.
4 A Yes.
5 Q So my question is: In order to constitute
6 multiple output channels as required by the claim,
7 do you need more than two wires to connect to a
8 voltage source?
9 ATTORNEY BRIGGS: Objection to form.
10 A To have multiple radiofrequency output
11 channels, you would need more than two wires.
12 Q Connected to the voltage source?
13 A Can you be more specific?
14 Q Sure. So -- and maybe some paper would be
15 helpful. And can I have my pen back? This is a
16 voltage source, correct?
17 ATTORNEY BRIGGS: Is this a new exhibit?
18 ATTORNEY COHEN: It will be in a moment.
19 ATTORNEY BRIGGS: So that's going to be D?
20 ATTORNEY COHEN: Yes.
21 Q Okay. I have drawn a circle with a
22 sinusoid inside that circle.

1 Would you understand that to be a voltage
2 source?
3 A Yeah, that can be a symbol for a voltage
4 source.
5 Q Okay. I have now drawn two single line
6 brackets coming out of that voltage source.
7 In your opinion, this only has a single
8 output channel, correct?
9 ATTORNEY BRIGGS: Objection. Form.
10 A My understanding of what you've
11 represented there is that is a voltage source with
12 a single output channel.
13 Q I have now added two brackets. Is this --
14 does this voltage source that I've drawn now have
15 multiple radiofrequency output channels?
16 A I don't know, based on that figure.
17 Q What do you not know? What would you need
18 to know?
19 A What you're showing there is not sort of a
20 complete picture of the system. So I think I
21 would want to understand. I understand you're
22 giving me a hypothetical. So to I think to answer

1 this I would need to understand how you're
2 configuring the system.
3 Q Sure. I think you have a drawing that's
4 on Page 27 of your declaration.
5 A Yes.
6 Q And here we have Exhibit 2007 from this
7 IPR. And you see that this is an entire system
8 that has two pairs of electrodes, correct?
9 ATTORNEY BRIGGS: Objection. Form.
10 A One, two, three, and four are electrodes.
11 Q Okay. And so in your opinion, does this
12 system have multiple radiofrequency output
13 channels?
14 ATTORNEY BRIGGS: Just to be clear,
15 counsel is pointing to Exhibit 2007 when she asked
16 the question.
17 A If the -- the item indicated inside of the
18 red box would have -- is indicating a single
19 output channel.
20 Q Okay. What about the -- do you see the
21 black dashed box that is larger than the red
22 dashed box on Page 27 of your declaration?

1 A Yes.
2 Q Does the black dashed box include multiple
3 radiofrequency output channels?
4 A With the limited information that's
5 provided here, I would say that it depends.
6 Q What does it depend on?
7 A It would, for example, depend on what the
8 devices might be used for.
9 Q What do you mean?
10 A Again, we gave one example, for example,
11 where two electrodes may not be -- let's say
12 electrodes two and four are not contacting
13 anything, right? So there are different
14 variations to consider. So I think the figure
15 that's shown here was a figure that was, you know,
16 provided to me by counsel. It's used to
17 illustrate a very generic point, but it's not a
18 complete description of a system.
19 Q Okay. If electrodes one, two, three, and
20 four were in contact with tissue --
21 A Yes.
22 Q And one and two -- or let's say one and

1 three are one bipolar pair and two and four are
2 another bipolar pair.
3 Do you have that in mind?
4 A Yes.
5 Q In that situation, does the dashed black
6 line include multiple radiofrequency output
7 channels?
8 A I wouldn't describe it that way.
9 Q Why not?
10 A Because the -- when you're talking about
11 channels, you're talking about the -- about the
12 output of the radiofrequency generator, and that's
13 what's in the red box. And that red box has
14 one -- has one output channel.
15 Q When we're talking about radiofrequency
16 generator, are we just -- are you talking about
17 anything that's housed in a console that you
18 connect to for radiofrequency energy?
19 ATTORNEY BRIGGS: Objection. Form.
20 A Can you repeat the question?
21 Q Sure. You said that the red box is the RF
22 generator and so that includes one output channel,

1 correct?
2 A That was how I was interpreting this
3 figure.
4 Q What if the RF generator included all the
5 wiring that's shown in the black dashed box? And
6 ignore the red dashed box. Okay? Do you have
7 that in mind?
8 A Okay.
9 Q Would that include multiple radiofrequency
10 output channels?
11 A Can you repeat the question? I'm sorry,
12 one more time.
13 Q Okay. If you ignore the red dashed box --
14 A Yes.
15 Q And you have an RF generator where
16 everything shown in the black dashed line is
17 housed inside the generator, does that have
18 multiple radiofrequency output channels?
19 A I think I'm just a bit confused by the
20 premise of your question. The generator is the
21 item in -- in this picture the generator is the
22 item in the red box? That is my understanding of

1 what's being illustrated here. The red box is the
2 generator.
3 Q Is there a world where the black dashed
4 box could be the generator?
5 A I guess what you're asking me is the red
6 box is a generator, but let's -- now we're going
7 to say it's not the generator and the black box
8 instead is the generator, even though the red box
9 is the generator, is what you're asking?
10 Q I think I'm trying to understand what your
11 understanding of generator is.
12 A Yes.
13 Q What is your understanding of generator?
14 A Specifically, in the context of the Stern
15 patent, which is what we're discussing here, a
16 generator can be considered a voltage source.
17 Q Okay.
18 A Which why that's what's being clearly
19 marked by the red box.
20 ATTORNEY COHEN: Okay. I'm going to label
21 this as Exhibit D.
22 ATTORNEY BRIGGS: I thought we already had

D.

ATTORNEY COHEN: I didn't enter it as an exhibit.

ATTORNEY BRIGGS: Well, you drew on it and you showed him questions on it. So it needs to be entered as an exhibit. This can be E.

ATTORNEY COHEN: All right. We can make that D. This one.

(Bikson Exhibit D, Drawing, marked for identification.)

ATTORNEY COHEN: Let's label this E.

(Bikson Exhibit E, Drawing of RF Generator, marked for identification.)

BY ATTORNEY COHEN:

Q All right. I've handed you a blank sheet of paper with lines on it.

A Okay.

Q Can you draw an RF generator that has multiple output channels?

A I'm not sure how to do that.

Q What is -- what do you not understand?

A I don't think I understand the question.

1 Q Okay. You've offered opinions on the '318
2 patent, correct?
3 A Yes.
4 Q And the '318 patent has a limitation that
5 requires multiple radiofrequency output channels
6 connected with the multiple pairs of bipolar
7 radiofrequency electrodes, correct?
8 A Yes.
9 Q And I'm asking you, because you're also
10 offering an opinion that Stern does not have
11 multiple radiofrequency output channels, correct?
12 A That's correct.
13 Q Can you draw a device that has multiple
14 radiofrequency output channels as required by this
15 claim?
16 A So, again, just hypothetically, I'm
17 drawing four electrodes. I guess I can label them
18 one, two, three, four?
19 And I'm drawing wires going to electrodes
20 one and two. And I'm drawing wires going to
21 electrode three and four. And I guess I'll put a
22 circle around one and two and around three and

1 four, so each -- this is one bipole and this is
2 another bipole. And the wires coming to them
3 would represent one channel and this would
4 represent another channel.
5 Q Where is the voltage source?
6 A The voltage source is not shown here.
7 Q Is the voltage source relevant to whether
8 there are multiple radiofrequency output channels?
9 A It can be.
10 Q If we turn to Stern, and you can look at
11 your declaration Page --
12 A Okay.
13 Q -- 28.
14 A Yes.
15 Q You would agree that Stern, within the
16 dashed box in Figure 15, that black dashed box,
17 looking at Stern Figure 15 on Page 28 of your
18 declaration --
19 A Stern -- oh, sorry. Yes. Go ahead.
20 Q That shows the same number of electrodes
21 and connections as you drew in Bikson Exhibit E,
22 correct?

A I mean, not exactly, but...

Q What -- what are the differences?

A So, specifically, there is an additional wire here.

Q Okay. That's fair.

But otherwise in the dashed box in Stern Figure 15, it also shows four electrodes and each electrode is connected to its own wire, correct?

A The -- it's correct that in Figure 15 from Stern you have four electrodes and each electrode is associated with a wire.

Q Okay. And in your depiction in Bikson Exhibit E, that shows two pairs of bipolar electrodes with multiple radiofrequency output channels, correct?

A That is what I intended to show, yes.

Q Okay. You can set that aside.

A One thing though I didn't draw here, I guess I should clarify is that these are energized so that there is current flowing here and current flowing here. So the reason I describe these as multiple pairs is with the understanding that I

1 think I said in words but I didn't write down that
2 there was current simultaneously flowing here and
3 here.
4 Q Okay. Like we were talking about earlier?
5 A Yes.
6 ATTORNEY BRIGGS: Objection. Form.
7 Q Okay. Along these same lines in your '318
8 declaration, on Page 33 --
9 A Okay.
10 Q -- you also opine that "Regardless of
11 whether Stern teaches multiple pairs of bipolar
12 radiofrequency electrodes and multiple
13 radiofrequency output channels (it does not),
14 petitioners and Dr. Martin have failed to show
15 that Stern teaches wherein each of the pairs of
16 multiple bipolar radiofrequency electrodes is
17 connected with a respective one of the multiple
18 radiofrequency output channels."
19 Do you see that?
20 A Yes.
21 Q And I guess if you can get back that --
22 oh, exhibit -- Bikson Exhibit E that you drew.

1 Does that drawing that you have show where
2 in each pair of the multiple pairs of bipolar
3 radiofrequency electrodes is connected with a
4 respective one of the multiple radiofrequency
5 output channels?
6 A I think it does though, again with the
7 caveats that I was explaining that these are
8 energized channels.
9 Q Okay. We'll set that aside.
10 In -- okay, in your '318 declaration on
11 Page 47, you offer opinions on Claim 6 of the '318
12 patent.
13 Do you see that?
14 A I do.
15 Q And you include the claim language in
16 Claim 6, that "the device of Claim 4 wherein the
17 multiple segments comprise a shape-memory alloy
18 material configured to expand to a desired size
19 and shape."
20 Do you see that?
21 A I do.
22 Q What's your understanding of the claimed

1 multiple segments?
2 A The -- the patent describes that the
3 device can be divided up into multiple segments.
4 Q Do you know what those segments are?
5 A So can I see the '318 patent?
6 Q Sure.
7 ATTORNEY BRIGGS: Do you just want to
8 stipulate the same disclosures in the '271?
9 ATTORNEY COHEN: Yeah, I assume it's the
10 same that it is labeled --
11 (Court reporter clarification.)
12 ATTORNEY COHEN: So this is going to be
13 Exhibit 1001 from the '318 IPR. We will stipulate
14 that this is the same as the '318 patent that was
15 submitted as Exhibit 1001, even though it is not
16 labeled as Exhibit 1001 from the IPR.
17 ATTORNEY BRIGGS: Do you know what that
18 means? That we are all agreeing that is the same
19 exhibit. It's in the IPRs we already had.
20 THE WITNESS: Okay.
21 ATTORNEY BRIGGS: It's the patent. They
22 just don't have the number on it.

1 THE WITNESS: Okay.
2 BY ATTORNEY COHEN:
3 Q So you now have the '318 patent and you
4 are going to be looking at what segment means.
5 (Court reporter clarification.)
6 ATTORNEY COHEN: Means, or what his
7 opinion is of what segments mean.
8 A I'm looking through now. Did you want to
9 point me where the '318 segments are described?
10 Q I was mostly asking your understanding of
11 it, but -- I mean, do you have an understanding in
12 offering your opinion on multiple segments what
13 that means in terms of the '318 patent?
14 A I'd rather refresh myself and read
15 the '318 sections --
16 Q Okay.
17 A -- and segment.
18 Q Why don't we set that aside. We can come
19 back to that later. I can give you a cite.
20 But one question I had is: If you've ever
21 worked with a shape-memory alloy metal in your
22 design work prior to working on this case?

1 ATTORNEY BRIGGS: Objection. Form.
2 A I don't recall in the devices that I've
3 designed working with a shape-memory alloy.
4 ATTORNEY COHEN: Okay. Why don't we take
5 a break because we've been going a bit.
6 ATTORNEY BRIGGS: Okay. Off the record.
7 (Recess.)
8 BY ATTORNEY COHEN:
9 Q Welcome back, Dr. Bikson.
10 You can set aside your '271 declaration
11 and the '271 patent. And we're now going to
12 turn -- and I'll make a little pile over here.
13 We're going to turn to the Foundry IPRs and,
14 specifically, your declaration that you offered
15 for '077IPR, which is IPR2024-00669.
16 Just let me know when you have that.
17 A (Document review.)
18 Q Do you have that in front of you,
19 Dr. Bikson?
20 A I do.
21 Q And starting on Page 22 of this
22 declaration, you opine that "a POSITA would not

1 have had a reasonable expectation of success in
2 treating target tissue with the Makower Figure 5H
3 device."
4 Do you see that?
5 A I do.
6 Q Okay. First, I want to talk about what
7 you say in paragraph 63 in this section. You say,
8 "I have been asked by counsel to assume that
9 supplying radiofrequency energy to the target
10 tissue as per Claim 1 of the '077 reads on
11 supplying ablative radiofrequency energy to that
12 target tissue."
13 Then you have in footnote 3 the claim
14 limitation.
15 Do you see that?
16 A I do.
17 Q And you say, "Thus, to read on the claims,
18 Makower's 5H device must reasonably be expected to
19 ablate the target tissue," correct?
20 A I see that.
21 Q And so you were instructed to assume that
22 supplying radiofrequency energy in Claim 1 means

1 that the device will ablate tissues using
2 radiofrequency energy; is that correct?
3 ATTORNEY BRIGGS: Objection to form.
4 A I'm sorry. Can you repeat the question?
5 Q I said you were instructed to assume that
6 supplying radiofrequency energy necessarily meant
7 and required ablating tissue using radiofrequency
8 energy; is that correct?
9 ATTORNEY BRIGGS: Objection to form.
10 A I think I was asked to assume that
11 supplying radiofrequency to target tissue as per
12 Claim 1 reads on supplying ablative radiofrequency
13 to that target tissue.
14 Q Okay. Because then you go on to say,
15 "Makower's Figure 5H device must reasonably be
16 expected to ablate the target tissue in order to
17 read on the claims," correct?
18 A That's what I say.
19 Q Not all radiofrequency energy that will be
20 delivered to tissue is necessarily ablative,
21 correct?
22 A Correct.

1 Q What are some things you would need to
2 know if radiofrequency energy were going to ablate
3 tissue?
4 A I think as we were discussing before, the
5 effects of energy on the body will be influenced
6 by many things, but a dominant factor will be the
7 type of energy that the target tissue is exposed
8 to. And as we were discussing earlier, that the
9 nature of that target energy will depend, among
10 other things, on the features of the device and
11 specifically of the dose of the device.
12 So these would be, again, things like
13 intensity, and you asked about number of pulses
14 and so on. And so, in general, what energy does
15 to the body will depend on the nature of the
16 energy. And whether or not the energy produces
17 ablation will therefore depend on the nature of
18 the energy applied.
19 Q Is radiofrequency energy typically
20 delivered in pulses?
21 ATTORNEY BRIGGS: Objection. Form.
22 A It can be delivered in pulses. I think it

1 would depend on the application.
2 Q Is radiofrequency energy typically
3 delivered as, like, a sinusoid --
4 ATTORNEY BRIGGS: Objection to form.
5 Q -- at a certain frequency?
6 A Often radiofrequency energy is delivered
7 using -- as a sinusoid or with a carrier being a
8 sinusoid.
9 Q I think you explain in paragraph 65 some
10 of the information you would need to understand to
11 know if RF energy is going to ablate tissue; is
12 that correct?
13 A Can you repeat the question?
14 Q In paragraph 65 of your declaration --
15 A Yes.
16 Q -- does this include some of the
17 information you would need to understand to know
18 if RF energy is going to ablate tissue?
19 A If I understand the question, a POSITA or
20 I would -- would understand that for there to be
21 ablation, the RF energy must have certain
22 characteristics, including as indicated there, the

1 amount of time, sufficient energy, and those
2 factors may actually interact. And then -- sorry.
3 Q Go ahead.
4 A And as I summarize in the next sentence, I
5 or a POSITA would understand that if a tissue does
6 not receive enough energy, then it may not be
7 ablated.
8 Q And when you say "a sufficient amount of
9 time," what is that amount of time?
10 ATTORNEY BRIGGS: Objection. Form.
11 A The amount of time that a device may need
12 to be activated in order to produce ablation would
13 vary, would depend on the application and the type
14 of device. As I mentioned, time, for example, and
15 energy interact.
16 Q Would the amount of energy being delivered
17 into the body depend on the voltage amounts of the
18 energy being delivered?
19 ATTORNEY BRIGGS: Objection. Form.
20 A The amount of energy delivered into the
21 body will depend on the voltage -- can depend on
22 the voltage generated by the source.

1 Q Can it also depend on the current
2 generated by the source?
3 A Yes.
4 Q Can it depend on the size of the
5 electrodes that are used?
6 A The amount of energy that is delivered
7 into the body, and therefore its effect on the
8 body can depend on the size of the electrodes.
9 Q In paragraph 64 you say you've "never seen
10 or used a device like Figure 5H device of Makower
11 to deliver energy to the nasal phalangeal
12 passage."
13 Do you see that?
14 A Yes.
15 Q Do you think it is necessary for Neurent,
16 the petitioner, to establish that a device like
17 that shown in Figure 5H of Makower has ever been
18 seen or used?
19 ATTORNEY BRIGGS: Objection. Form.
20 A I -- I think I think you asked me a legal
21 question. I'm not sure I understand it, but I
22 don't know if it's a legal question.

1 Q Okay. Well, you include here, "I also
2 understand that neither" -- or I have never --
3 sorry -- strike that.
4 You say, "I have never seen or used a
5 device like the Figure 5H device of Makower. I
6 also understand that neither Dr. Levine nor
7 Dr. Bu-Saba have ever seen or used a device like
8 of that Makower 5H."
9 So I guess my question is: Are those
10 statements relevant to your analysis?
11 A I think they inform my analysis.
12 Q How so?
13 A I suppose that if hypothetical -- if
14 Dr. Levine or Dr. Bu-Saba had used a device like
15 Makower in Figure 5H, that would be a different
16 fact for me to consider, as opposed to neither of
17 them having seen or used a device like that. I
18 understand that both Dr. Levine and Dr. Bu-Saba
19 are very -- have substantial experience that is
20 relevant. And so that's why I simply note that
21 they have not seen or used a device like that.
22 Q Did these statements factor into your

1 opinion on whether petitioner had established
2 invalidity?
3 ATTORNEY BRIGGS: Objection to form.
4 A You mean my opinion about whether a POSITA
5 would have a reasonable expectation of success in
6 treating the target tissue?
7 Q Yes. Let me rephrase then.
8 Did the statements in paragraph 64 factor
9 into your opinion as to whether a POSITA would
10 have a reasonable expectation of success in
11 treating tissue with Makower Figure 5H?
12 A I would say that my opinion was primarily
13 developed based on my understanding of the
14 underlying technical factors and not primarily
15 developed based on those statements. Though I do
16 think those statements are confirmatory of my
17 conclusions that are reached through engineering
18 analysis.
19 Q Okay. Okay. In paragraph 67, you opine,
20 "a POSITA would not have had a reasonable
21 expectation of success in the Makower-Fang
22 combination because a POSITA would have understood

1 that the 5H structure" -- and then it continues.
2 But this is your opinion on why a POSITA
3 would not have had a reasonable expectation of
4 success in Figure 5H working in the nasopharyngeal
5 passage; is that correct?
6 ATTORNEY BRIGGS: Objection to form.
7 A I'm not sure I understood the question.
8 Q That's fair. I want to point you to
9 paragraph 67.
10 Is that fair?
11 A Okay.
12 Q And the paragraphs that follow.
13 Your opinion is that Figure 5H in Makower
14 would not work in the nasopharyngeal passage,
15 correct?
16 ATTORNEY BRIGGS: Objection. Form.
17 A My opinion is that the device shown in
18 Figure 5H of Makower would not be reasonably
19 expected to succeed in treating the target tissue.
20 Q And if you go to Page 29, that's because
21 the interior of the device is hollow and as you
22 show in Figure 29, you would understand the -- the

1 interior of the device to be filled with
2 electrolytic fluid; is that correct?
3 ATTORNEY BRIGGS: Objection to form.
4 A I think there were certain multiple
5 elements in your question. Could you ask it --
6 I'm sorry, could you repeat the question, please?
7 Q Your opinion that Figure 5H of Makower
8 would not be reasonably expected to succeed in
9 treating tissue in the nasopharyngeal passage is
10 because, as you show on Page 29, it's your
11 understanding that the interior of that structure
12 would be filled with electrolytic fluid; is that
13 correct?
14 ATTORNEY BRIGGS: Objection. Form.
15 A So as I describe in my report, my analysis
16 of why the device would not have a reasonable
17 expectation of success was based, among other
18 things, my expertise in analyzing how energy is
19 delivered into the body by devices such as this.
20 You know, sort of explaining earlier that when
21 you're analyzing how energy is delivered into the
22 body, among other things, you need to be

1 considering the configuration of the stimulation
2 technology itself, but you also need to be aware
3 of the anatomy where that device is being used.
4 So both those factors were therefore considered in
5 this case here. As you already mentioned, I point
6 out to the fact that the device is hollow. I also
7 point to the fact that the electrodes are
8 cylindrical electrodes. And only a small amount
9 of the cylindrical electrodes could be touching
10 the neighboring tissue.
11 And I point to the fact that the space --
12 because the device is hollow and because of the
13 nature of the space, there is going to be
14 different forms of electrolytes in the space
15 marked by yellow. And so those were all the
16 factors that came together in supporting my
17 conclusion.
18 Q Your understanding that there is fluid in
19 this passage comes from Dr. Levine; is that
20 correct?
21 A That's one of the sources of my
22 understanding.

1 Q And I think we talked earlier, but you
2 don't know the steps that are taken to perform a
3 procedure in the nasopharyngeal passage; is that
4 correct?
5 ATTORNEY BRIGGS: Objection to form.
6 A I think before you were asking whether I
7 understood those steps as well as a clinician who
8 was operating them, and I do not think I would
9 understand all the steps as completely as --
10 necessarily as completely as a clinician who was
11 trained in this procedure.
12 Q Do you understand any steps that would be
13 taken before performing a procedure in the
14 nasopharyngeal passage?
15 ATTORNEY BRIGGS: Objection to form.
16 A Yes.
17 Q What steps do you understand?
18 A It would depend, of course, on the
19 application, but one step would be to position the
20 device.
21 Q Do you know if there is any -- do you know
22 about any other steps taken before performing one

1 of these procedures?
2 A Of course, another -- it would depend on
3 the details of the device, but one would expect
4 for these type of devices another step would be
5 energizing the electrodes.
6 Q Okay. Anything else?
7 A Because the device is not intended to be
8 left inside the nostril, another step would be at
9 least some of the devices we discussed, you would
10 move the device.
11 Q Okay. Do you know about any steps that
12 are taken before positioning the device?
13 A One of the steps, in fact, that Dr. Levine
14 explained to me during our phone call is that the
15 nostril is irrigated, essentially cleaned, and
16 that this is actually done with an electrolyte.
17 This factored into my analysis because that would
18 further contribute to the presence of an
19 electrolytic fluid in the region I'm showing there
20 with yellow.
21 Q So it's your understanding from Dr. Levine
22 that the nostril would be irrigated with fluid and

1 that that fluid would remain in the nasopharyngeal
2 passage?
3 A My understanding is that some of that
4 fluid would remain.
5 Q Do you know how much?
6 A I don't know how much.
7 Q If we took the drawing that's shown on
8 Page 29 --
9 A Yes.
10 Q -- and in a hypothetical if you assumed
11 that there was no electrolytic fluid in that space
12 that you colored in yellow?
13 A Okay.
14 Q So it's filled with air --
15 A Okay.
16 Q -- in my example.
17 Is the electrical energy going to go
18 through the tissue or through the air?
19 ATTORNEY BRIGGS: Objection. Form.
20 A So now, I understand you're asking me a
21 hypothetical, so now we're not talking about
22 something being in the nose?

1 Q Well, if it was in the nose but if it was
2 filled with air and there was no fluid --
3 ATTORNEY BRIGGS: Objection. Form.
4 A If it was in the nose, then there is going
5 to be some fluid.
6 Q Which is your understanding based on
7 Dr. Levine. Based -- in my hypothetical, if there
8 is air inside this device, where is the
9 radiofrequency energy going to go?
10 A If I'm understanding your hypothetical,
11 you're asking me, this is still inside the nose?
12 Q I guess if -- let's just take a passage in
13 the body --
14 A Right.
15 Q And inside what we see in Figure 5H in
16 Makower, it's filled with air.
17 A Okay.
18 Q The energy in that situation would go into
19 the tissue, it is not going to travel across air,
20 correct?
21 A So if I understand your hypothetical, it's
22 not the nose, it's a passage in the body in which

there is no electrolyte and I'm not aware of a passage in the body that would be like that. Then you're asking me in this hypothetical situation where would the current go?

Q Correct.

A I'm sorry. Can you repeat the question, just so I got it?

Q Sure. If we look at Figure 5H.

A Yes.

Q And the area that you filled in yellow is actually filled in with air.

A Yes.

Q Is the current going to travel across the air or is it going to travel through the tissue?

A In the hypothetical you gave, which of course would not be the case in the nose, the current cannot travel through the air.

Q And the current would only travel through the tissue?

A In sort of this hypothetical tissue that has no electrolyte on the surface of it, then the current would travel -- I mean, again it would

1 depend I guess on the configuration.
2 Q But the current would travel through the
3 tissue, correct?
4 A If there was a perfectly dry orifice with
5 no electrolyte in it, then there may be ways to
6 configure the device so that the current can't
7 travel through the air so it would travel through
8 the tissue.
9 Q Well, current really can't travel through
10 air, correct?
11 A That's correct.
12 Q Have you ever worked on any cardiac
13 ablation devices?
14 ATTORNEY BRIGGS: Objection. Form.
15 A I believe I have.
16 Q What cardiac ablation devices have you
17 worked on?
18 A I don't remember all the details. I do
19 remember it was a catheter-delivered device that
20 went inside the heart.
21 Q What did you do?
22 ATTORNEY BRIGGS: Objection to form.

1 Q What was your work related to that device?
2 A I don't -- I can describe it. I'm not
3 sure if it is -- I believe I did that. It was a
4 consulting work that was done for a company. I'm
5 not sure if the work necessarily was confidential.
6 Should I still talk about it?
7 Q No, you don't need to -- if you can talk
8 about it at a high level. I don't want to know
9 confidential information.
10 A They had come up with -- this was a while
11 ago, but as I remember it, they had come up with a
12 way to maneuver the catheter along the interior of
13 the heart before applying the energy. So I was
14 part of a team that was supporting them, if I
15 remember correctly, with some computational
16 models.
17 Q What were the computational models of,
18 were they of applying energy or maneuvering the
19 catheter?
20 ATTORNEY BRIGGS: Objection to form.
21 A They included biomechanical models. I
22 don't remember if they also include models of -- I

1 don't remember if it also included models of the
2 energy application.
3 Q Okay. But you recall working on
4 biomechanical models of how this catheter would be
5 maneuvered to the heart, correct?
6 ATTORNEY BRIGGS: Objection. Form.
7 A I do, but again it was a while ago, so I
8 don't have a precise -- as I'm sitting here now, I
9 don't have a precise recollection of all the steps
10 we took.
11 Q And you don't recall, sitting here today,
12 working on any models of energy application inside
13 the heart?
14 ATTORNEY BRIGGS: Objection. Form.
15 A I don't. Though I think a lot of the
16 other work I've done, general principles related
17 to energy deployment would certainly be relevant
18 inside the heart.
19 Q Now, you've used ring electrodes in
20 devices before, correct?
21 ATTORNEY BRIGGS: Objection. Form.
22 A I have worked with technologies that use

1 ring electrodes.
2 Q And you've been able to use those ring
3 electrodes and configure them to deliver energy to
4 the target tissue in the way that you want,
5 correct?
6 ATTORNEY BRIGGS: Objection. Form.
7 A So the work I've done with devices that
8 use ring electrodes, this included, for example,
9 deep brain stimulation electrodes. These are
10 electrodes that are inserted into the brain.
11 They're used to treat different neurological and
12 psychiatric disorders. Majority of those
13 electrodes would be using ring electrodes. And
14 part of the analysis that -- among the analysis
15 that my lab has done, for example, would be
16 analyzing how current is delivered by these
17 devices.
18 Q If I were to put -- if this pen had a ring
19 electrode on it, and I were to put that on the
20 surface of my skin, the current would flow through
21 my skin into my tissue and not into the air,
22 correct?

1 ATTORNEY BRIGGS: Objection. Form.
2 A I think that's good intuition, and,
3 obviously, you have to have another electrode and
4 so on, but that's correct. The current would not
5 flow into the air. In the example you gave, based
6 on my understanding of, it would flow into the
7 skin.
8 Q Okay. Can you turn to paragraph 84.
9 And in this section you're talking about
10 Imran and Makower, correct?
11 A I'm talking about Makower and I'm talking
12 about Imran -- yes.
13 Q On Page 35, you have an annotated figure
14 from Imran. Excuse me, Imran.
15 Do you see that?
16 A I do.
17 Q Who created these annotations?
18 A I don't remember. I might have created
19 the initial version and counsel created the
20 version that you see here.
21 Q And this figure is showing arrows in
22 multiple directions, correct?

1 ATTORNEY BRIGGS: Objection. Form.
2 A The -- yes, there are arrows pointed in
3 multiple directions.
4 Q And one of these directions is in a
5 perpendicular orientation to the axis of that
6 strut on which the electrode is positioned; is
7 that correct?
8 ATTORNEY BRIGGS: Objection to form.
9 A Yeah, yes, you can describe it that way.
10 Q And so in the Imran device, in addition to
11 delivering energy in -- in your opinion in the
12 parallel to that axis, it will also deliver energy
13 perpendicular to the longitudinal axis of the
14 strut on which the electrode is positioned,
15 correct?
16 ATTORNEY BRIGGS: Objection to form.
17 A My understanding is that the majority of
18 energy would be delivered in sort of that
19 longitudinal axis shown by the other two arrows.
20 Q And some energy would be delivered in the
21 perpendicular axis, correct?
22 A I expect that a small amount of energy

1 could be delivered in that direction. It would,
2 of course, depend on the details.
3 Q And that direction is lateral to the
4 longitudinal axis, correct?
5 ATTORNEY BRIGGS: Objection to form.
6 A I think that direction is a direction that
7 I generally refer to as the lateral direction in
8 my report.
9 Q And in the Imran device --
10 A But I just would like to clarify that the
11 arrows that were created here perhaps a version
12 initially by me and then by counsel, the size of
13 the arrows is not intended to represent the amount
14 of current. It's simply supposed to -- as
15 indicated, indicate that there are multiple
16 possibilities of where the current would flow
17 where the actual amount would be determined by the
18 anatomical factors.
19 Q Okay. And in the Imran device, you would
20 agree that unlike in the Makower device, these are
21 not ring electrodes, correct?
22 ATTORNEY BRIGGS: Objection. Form.

1 A My understanding -- when I was
2 interpreting Imran, I was interpreting it as not
3 being a complete ring. Though it could be a
4 partial ring.
5 Q Okay. And in the Imran device, it is not
6 going to deliver energy in the interior portion of
7 the structure that we see in Figure 1 on Page 35
8 of your declaration?
9 ATTORNEY BRIGGS: Objection to form.
10 A I'm sorry. Which figure?
11 Q So I'm looking at Page 35 of your
12 declaration.
13 A Page 35, yes.
14 Q Figure 1 from Imran.
15 Do you see that?
16 A Yes.
17 Q And there is an internal space in Figure 1
18 between the struts of the device that are shown.
19 Do you see that?
20 A Yes.
21 Q Imran is not going to be delivering energy
22 into that internal space, correct?

A Imran would deliver energy into that internal space.

Q How?

A So that internal space for the applications we've been discussing so far includes conductive electrolyte and that electrolyte is preferentially conductive to the current. There's that expression that the current takes the path of least resistance, and that would be true in this case as well.

So the current would travel through that electrolyte as well.

Q Even though it just has surface electrodes on the external surface of the struts of Imran?

A The deficiency of Imran, as I tried to explain, is that the struts stick above the electrode in this case. And I'm showing in the -- sort of the expansion in 35, how that -- how the fact that it extends above creates a pathway for the current to not enter the -- the tissue, but rather, you know, escape laterally, and from there it would be traveling through the electrolyte.

1 Q Have you worked on a device that looks
2 like this device shown in Imran?
3 ATTORNEY BRIGGS: Objection. Form.
4 A I have not worked on a device that bears a
5 lot of resemblance to the image shown in Figure 1.
6 Q Prior to working on this case, did you
7 know Dr. Levine?
8 A No.
9 Q Do you know Dr. Martin?
10 ATTORNEY BRIGGS: Objection. Form.
11 A I don't know Dr. Martin, prior to working
12 on this case, yes.
13 Q Do you know Dr. Bu-Saba prior to working
14 on this case?
15 A I don't.
16 Q Do you know Dr. Delgaudio prior to working
17 on this case?
18 A I don't think so.
19 ATTORNEY COHEN: Let's take a ten-minute
20 break off the record.
21 (Recess.)
22 BY ATTORNEY COHEN:

1 Q Throughout the day on any of the breaks,
2 have you discussed the substance of your testimony
3 with counsel?
4 A No.
5 Q Can you -- do you still have your CV in
6 front of you?
7 A Yes.
8 Q Can you turn to Page 25 and 26. And I'm
9 back in the litigation support.
10 A Okay.
11 Q Is there anything missing from this list
12 of litigation support where you've offered expert
13 opinions?
14 A Not that I'm aware of. I do my best to
15 keep this complete.
16 Q Did you offer a series of declarations in
17 IPRs between Boston Scientific and Nevro?
18 A I was engaged on a matter related to
19 Boston Scientific and Nevro. I don't think -- I
20 don't think I've provided any declarations.
21 Q You don't recall providing any
22 declarations in that matter?

1 A I -- as I recall, I did not provide
2 declarations in that matter.
3 ATTORNEY COHEN: I don't think we have any
4 further questions.
5 ATTORNEY BRIGGS: Okay. We will, but
6 we're going to go get ready.
7 (Recess.)
8 EXAMINATION BY
9 ATTORNEY BRIGGS:
10 Q Okay. Dr. Bikson, earlier today counsel
11 for asked about the definition of POSITA as
12 relates to the '271 patent.
13 Do you remember that?
14 A Yes.
15 Q Can you please grab your '271 declaration,
16 please.
17 A I have it.
18 Q Can you please turn to the section on
19 POSITA, especially turning to 13 in your correct
20 definition of paragraph 41.
21 A Okay.
22 Q Do you see paragraph 41?

1 A I do.
2 Q Do you remember when counsel asked you
3 about the removal of clinical use or testing of
4 medical devices today?
5 A I do.
6 Q Does your definition preclude the use --
7 the experience of clinical use or testing medical
8 devices?
9 A No.
10 Q So in other words, you can have at least
11 three years of experience in the design and
12 development of medical devices and also could have
13 experience with clinical use of medical testing?
14 A Correct. You could have three years of
15 experience in the design and development --
16 (Court reporter clarification.)
17 A You could have at least three years of
18 experience in the design and development of
19 medical devices, as well as experience in the use
20 of medical devices.
21 Q Okay.
22 And looking at Paragraph 42, do you still

1 agree with the substance of your testimony in
2 Paragraph 42?
3 A Yes.
4 Q And what is that substance of that
5 testimony?
6 A That I meet both parties' definition of a
7 POSITA at the time of the challenged claims of
8 the '271.
9 Q Okay. So moving to a different topic, do
10 you remember earlier today when counsel asked you
11 about whether you designed devices that have an
12 intended use of ablating the nasopharyngeal
13 passage?
14 A Yes.
15 Q Are you familiar with ablation?
16 A Yes.
17 Q How so?
18 A I've worked for several decades on devices
19 that can produce ablation. I have studied the
20 device features that can lead to ablation. I have
21 studied and published extensively on the
22 mechanisms leading to ablation, how to control the

1 degree of ablation, and I think I'm broadly
2 recognized as an expert on that topic.
3 Q Do you remember when you were asked about
4 the patent matters listed in your CV today?
5 A I do.
6 Q What I'm going to introduce as exhibit, is
7 that F? Dr. Bikson, I'm handing what will be
8 Bikson F.
9 Do you recognize this document?
10 (Bikson Exhibit F, United States Patent
11 Application Publication Number U.S. 2010 0217356,
12 marked for identification.)
13 Q So Dr. Bikson, now that you have Exhibit F
14 in front of you, do you recognize this document?
15 A I do.
16 Q If you look at the front page of this
17 document, it is U.S. -- United States patent
18 application publication number U.S. 2010 0217356.
19 Do you see that?
20 A I do.
21 Q And in the -- off the left-hand side
22 towards the top there is an inventor list.

1 Do you see that?
2 A I do.
3 Q Who are the named inventors?
4 A Myself, Marom Bikson; Maged Elwassif, and
5 Qingjun Kong.
6 Q You're the Marom Bikson listed as the
7 inventor on this patent?
8 A Correct.
9 Q When was this patent filed?
10 A This application was filed in February of
11 2009.
12 Q And that predates the priority date of the
13 Aerin patents; is that correct?
14 A That is correct.
15 Q Can you please turn to Paragraph 17 of
16 this document.
17 A I'm on Paragraph 17.
18 Q Just read it to yourself and let me know
19 when you're ready.
20 A I've read it.
21 Q It says, "Excessive heating can lead to
22 tissue ablation, brain damage, and death."

1 Do you see that?
2 A I do.
3 Q So you're discussing ablation in this
4 paragraph, correct?
5 A That is correct.
6 Q Where did your understanding of ablation
7 concepts relative to Paragraph 17 of this patent
8 come from?
9 ATTORNEY COHEN: Objection. Beyond the
10 scope of cross-examination.
11 Q You can answer.
12 A So as I mentioned, I've studied the
13 principles of ablation for a long period of time.
14 By the time this application had been filed, I
15 would be -- I would have looked at the principles
16 of ablation for approximately 15 years. One of
17 the key mechanisms that's understood to drive
18 ablation is temperature increases. And that is a
19 topic that is addressed in this patent. So I have
20 in the course of this patent and throughout my
21 career considered how devices that apply energy to
22 the body can produce heating and when that heating

1 crosses a critical threshold that heating can lead
2 to irreversible tissue damage.
3 And, therefore, ablation and so a lot of
4 my work relates to how to apply energy to the body
5 in a controlled way. I've developed the most
6 advanced computational models, I believe, and
7 published on that as far as how to control the
8 delivery of -- how to control the delivery of
9 energy into the body, how that energy delivery
10 then leads to temperature rises as a consequence
11 of both the device parameters and the anatomy and
12 tissue properties. And then considered the
13 consequences of that temperature rise which can
14 include ablation.
15 ATTORNEY COHEN: I'm going to object to
16 that entire answer as being beyond the scope of my
17 cross-examination.
18 ATTORNEY BRIGGS: Your objection is noted.
19 We are done with that one. You can give
20 her...
21 BY ATTORNEY BRIGGS:
22 Q Dr. Bikson, can you please go back to your

1 '271 patent declaration. And specifically, can
2 you look at Claim 1 on Page 16.
3 A Okay.
4 Q Do you remember when counsel earlier today
5 asked you about the order of the contacting and
6 applying steps in 1A and 1B?
7 A I believe so.
8 Q Is it appropriate in your opinion to do
9 the applying step before the contacting step?
10 A That would not -- no.
11 Q Why is it not appropriate?
12 A You need to apply contact, in this case of
13 the electrodes, with the tissue. Once you apply
14 contact there is a pathway for the energy to be
15 delivered into the tissue.
16 Q Could the contacting and applying steps
17 occur at about the same time?
18 A They could occur at about the same time.
19 Q Could the applying step occur after the
20 contacting step?
21 A The applying step can occur after the
22 contacting step.

1 Q Okay. Could you please turn to Page 24 of
2 that same declaration.
3 Do you remember earlier today when counsel
4 asked you about Figure 15 of Stern?
5 A Yes.
6 Q And do you remember testifying that if
7 Stern had multiple pairs of bipolar electrodes,
8 something along the lines of that phrasing?
9 A Yes.
10 Q Does Stern have multiple pairs of bipolar
11 electrodes?
12 A Stern does not have multiple pairs of
13 bipolar electrodes. In reviewing the Stern
14 patent, I understood that Figure 15 is a key
15 figure in illustrating the scope of Stern's
16 invention. In Figure 15, you have a single
17 voltage source, which is the generator, you have
18 some switches that are labeled from 232 to 248,
19 then you have electrodes, and those are labelled
20 from 220 from --
21 (Court reporter clarification.)
22 A I'm sorry. The electrodes are labelled

1 from 220, 222, 224, and 226.
2 What Stern describes is the closing of two
3 switches. So, for example, one can close switch
4 248 and one could close switch 236. The closing
5 of two switches produces a single bipole. A
6 single bipole is not multiple bipoles. We simply
7 have two electrodes forming one bipole.
8 Alternatively, you could, for example,
9 close switch 246 and switch 234. That would
10 activate electrodes 226 and 222. Those two
11 electrodes form a single bipole, and a single
12 bipole is not multiple bipoles or bipole electrode
13 pairs.
14 Therefore Stern does not disclose multiple
15 electrode pairs. Stern, at most, discloses a
16 single electrode pair. When all of the switches
17 are open, then there are no electrode pairs at
18 all.
19 ATTORNEY BRIGGS: Okay. Next topic, can
20 we please see Exhibit C, I believe it is. Thank
21 you.
22 BY ATTORNEY BRIGGS:

1 Q So in front of you now, Dr. Bikson, is
2 Exhibit C.
3 Do you see that?
4 A I see it.
5 Q Do you remember creating this drawing at
6 counsel's request today?
7 A I do.
8 Q And do you see that you have a Row 1 at
9 the top that goes laterally across the page?
10 A I see that there is a -- a row at the top.
11 Q What do you see in this figure?
12 A It's -- it's from the '271 patent. This
13 shows an embodiment where you have a device.
14 There are multiple electrodes on the surface of
15 the device. Some of them are labeled as positive
16 and negative. And that device can be configured
17 into bipoles.
18 Q You have a first circled set of electrodes
19 at the top, correct?
20 A Correct.
21 Q Is that two electrodes at the top you that
22 you circled?

1 A That is two electrodes.
2 Q Is that a row of multiple -- is that a row
3 of pairs of electrodes?
4 ATTORNEY COHEN: Objection. Beyond the
5 scope.
6 A That is a row with a single bipole.
7 Q And then below that you have Row 2,
8 correct?
9 A Correct.
10 Q Is that a row a multiple -- is that
11 a pair -- is that a pair or pairs of electrodes?
12 A That is a row with a single bipole pair.
13 Q Do the two circled instances at the top of
14 the figure read on Claim 1 of the '318 patent,
15 specifically if you look at your declaration at
16 Page 16, I believe, of the '318 -- excuse me.
17 Scratch that. It's the '271. I apologize.
18 Claim 1 of the '271.
19 That is column 16, Page 16, excuse me.
20 ATTORNEY COHEN: Objection. This is
21 beyond the scope of cross-examination. It is
22 improper redirect testimony. And also leading.

1 ATTORNEY BRIGGS: We disagree. It's --
2 you asked him a ton of questions about rows.
3 We're going over what the rows means in the
4 context of the claim of the patent.
5 ATTORNEY COHEN: You're going beyond the
6 figure.
7 ATTORNEY BRIGGS: We're asking what the
8 figure means and relative to the claims, which is
9 completely within the bounds.
10 ATTORNEY COHEN: No, it is not.
11 ATTORNEY BRIGGS: Okay. You can object.
12 BY ATTORNEY BRIGGS:
13 Q Do you see element A, it says, "wherein
14 the treatment element comprises two rows of
15 bipolar electrode pairs"?
16 A I see that.
17 Q Does the circled instances that you have
18 in Exhibit C read on that requirement?
19 A No.
20 Q All right. Can we please go to Exhibit E.
21 Do you remember drawing this at counsel's
22 instance?

1 A Yes.
2 Q And I believe she was asking you to draw
3 this in relation to the claims of the '318 patent
4 in the context of multiple frequency output
5 channels.
6 Do you recall that?
7 A Yes.
8 Q Can you please explain to me whether it's
9 possible to have multiple radiofrequency output
10 channels in relation to figure E? Exhibit E,
11 excuse me.
12 A It is. What I drew here was four
13 electrodes. I labeled them 1, 2, 3, 4.
14 Electrodes one and two are forming a one bipole.
15 Electrodes three and four are forming another
16 bipole. The two wires going to 1-2 are a first
17 channel and the wires going to 3-4 are a second
18 channel.
19 Q And how do you generate two different or
20 how do you -- how do you get to multiple
21 radiofrequency output channels with those multiple
22 pairs in that drawing?

1 A One way you can do it as an
2 implementation. This would just be one way to do
3 it would be to have a voltage source at the
4 position I'm showing here. I'm -- I'm pointing to
5 the -- the first two lines. You would have a
6 separate voltage source to the position I'm
7 pointing to here. I'm pointing at the lines going
8 to electrodes 3 and 4.
9 ATTORNEY BRIGGS: No further questions.
10 ATTORNEY COHEN: I have a few follow-up.
11 CONTINUED EXAMINATION BY
12 ATTORNEY COHEN:
13 Q Let's go back to paragraph 41 of your '271
14 declaration.
15 And you were asked by counsel whether your
16 definition precludes the clinical use of medical
17 devices, and you said it did not.
18 Do you recall that?
19 A Yes.
20 Q But in your opinion, it is insufficient
21 for a person to have an MD and three years of
22 experience in the clinical use of medical devices

1 without having three years of experience in the
2 design and development of medical devices,
3 correct?
4 A In my opinion, it would be insufficient
5 for a POSITA to have an MD or a bachelor's of
6 science degree in engineering and at least three
7 years of experience in only the clinical use.
8 Q And then you were asked about
9 paragraph 42.
10 Do you recall that?
11 A 42?
12 Q Sorry. You were asked by Mr. Briggs about
13 your opinions in Paragraph 42 during your redirect
14 examination.
15 Do you recall that?
16 A Yes.
17 Q And you said it's still your opinion that
18 you meet both parties' definitions of a POSITA at
19 the time of the invention.
20 Do you see that?
21 A Yes.
22 Q It's also still your opinion that your

1 opinions are the same regardless of which
2 definition applies, correct?
3 A Correct.
4 Q All right. I want to turn back to the
5 patent publication that Mr. Briggs introduced. Do
6 you still have that in front of you or -- here it
7 is. This -- we're back to Bikson Exhibit F. And
8 you have that?
9 A I do.
10 Q And so this device relates to a device
11 that's used for deep brain stimulation; is that
12 correct?
13 ATTORNEY BRIGGS: Objection. Form.
14 A It -- it -- among its scope, it can apply
15 to a device that's used for deep brain
16 stimulation.
17 Q And in this patent application, are you
18 trying to avoid ablation occurring?
19 A In this patent application, you were
20 trying to manage how much ablation is occurring.
21 Q Do you want ablation to occur when you're
22 applying deep brain stimulation?

1 A For -- for applications of deep brain
2 stimulation for things like movement disorders and
3 other applications like that, often the goal is
4 not to produce ablation. There are other examples
5 where the treatment of, for example, these
6 movement disorders does involve the intentional
7 production of ablation.
8 Q But that -- those don't involve deep brain
9 stimulation?
10 A The term deep brain stimulation is usually
11 used to apply to the first example where you are
12 not trying to produce ablation. The technologies
13 that you would then use intentionally to produce
14 ablation, I don't think would be called deep brain
15 stimulation.
16 Q Okay. You can set that aside.
17 Let's turn back to your '271 declaration.
18 And you were asked at Page 24 about your opinion
19 about Stern not disclosing two bipolar electrode
20 pairs.
21 And counsel asked you, is it your opinion,
22 I think we all know it's not.

1 If Stern disclosed closing switches 248
2 and 246 and 236 and 234, would Stern have multiple
3 bipolar electrode pairs?
4 ATTORNEY BRIGGS: Objection to form.
5 A Stern does not disclose closing the
6 switches at the same time.
7 Q If it did, would Stern have multiple
8 bipolar electrode pairs?
9 ATTORNEY BRIGGS: Objection. Form.
10 A So you're asking me if Stern does not
11 disclose it. But if those switches were closed --
12 one of the reasons why it is important to have
13 multiple channels is that they can be
14 independently controlled. And I think that the --
15 the '271 patent is pretty clear in explaining why
16 that is. And I think it would also be consistent
17 with what a POSITA would know.
18 In a situation like what you just
19 described where all those switches are closed, you
20 now have a single source. And, again, the
21 situation you described is not in Stern, but if
22 you were to treat it as a hypothetical, you now

1 have a single source and it's connected to four
2 electrodes. And the difficulty at this point is
3 that you are not controlling the delivery of the
4 energy to those bipoles independently. As
5 described in the -- in the '271 patent, you could,
6 for example, have an a situation where there is an
7 impedence mismatch. Let's say the 220, 224 pair
8 has a very high impedence, and the 222, 226 has a
9 very low impedence. In such a situation, the
10 current flow to the 222-226, and the current would
11 not flow to the 220-224.
12 So even if we did what you were
13 describing, which is not described in Stern, it
14 would have this problem with it that is overcome
15 in -- in the -- invention.
16 Q I'm going to point you to Page 16 of your
17 declaration because you were just talking about
18 radiofrequency output channels and this whole
19 independent control. The '271 patent doesn't
20 require multiple radiofrequency output channels,
21 correct?
22 A Claim 1 does not specify multiple

1 radiofrequency output channels.
2 Q Okay. So then turning back to Page 24,
3 we're only talking about multiple bipolar
4 electrode pairs.
5 A Yes.
6 Q Not radiofrequency output channels.
7 Do you have in mind?
8 A Okay.
9 Q And you were asked by Mr. Briggs about
10 your opinion as to whether Stern has multiple
11 bipolar electrode pairs.
12 And my question was, I understand it's
13 your opinion Stern does not disclose this, but if
14 Stern disclosed closing switches 248, 246, 236,
15 and 234, would it have multiple bipolar electrode
16 pairs?
17 ATTORNEY BRIGGS: Objection. Form.
18 A I'm sorry. Can you repeat the question
19 one more time?
20 Q If Stern disclosed closing switches 248,
21 246, 236, and 234, would Stern have multiple
22 bipolar electrode pairs?

1 ATTORNEY BRIGGS: Same objection.
2 A I'm not sure how to answer that since
3 Stern doesn't disclose that.
4 Q Do you not understand what happens when
5 you close the switches in Stern?
6 A Stern describes closing, at most, two
7 switches at a time. So -- and that -- based on
8 that I was able to analyze the -- what Stern is
9 describing. I think what you're describing is
10 something different.
11 Q I understand your understanding of Stern.
12 My question is in a hypothetical where switches
13 248, 246, 236, and 234 are all closed, are there
14 multiple bipolar electrode pairs?
15 A I think I would need to understand more
16 about the hypothetical to answer that.
17 Q What would you need to understand?
18 A I -- I would want to understand what else
19 you are changing about Figure 15.
20 Q I'm just closing four switches. That's
21 all I'm doing. I'm closing switch 248, 246, 236,
22 and 234.

1 In that scenario are there multiple
2 bipolar electrode pairs?
3 A I don't think you would do that, because
4 if you did that you would lose control. You would
5 not have the -- the independent control that you
6 desire. And so it's not something that you would
7 do.
8 Q If you did that, though, would you have
9 multiple bipolar electrode pairs?
10 ATTORNEY BRIGGS: Objection. Form.
11 A I would not do it.
12 Q Okay. I'm instructing you in this
13 hypothetical that you do close switch 248, 246,
14 236, and 234. In that scenario, are there
15 multiple bipolar electrode pairs?
16 ATTORNEY BRIGGS: Same objection.
17 A I'm not sure how to answer that question.
18 Q Why not?
19 A My analysis was focused on Stern and the
20 Stern specification. Stern describes, at most,
21 the closing of two switches. And so what you're
22 describing is -- is -- is not compatible with

1 Stern. It's not compatible with Figure 15 in
2 Stern.
3 Q Is there something that would
4 malfunction -- strike that.
5 You understand the circuit diagram that we
6 see in Figure 15, correct?
7 A I do.
8 Q And if you closed switches 248 and 246,
9 electricity would flow to electrodes 220 and 222,
10 correct?
11 A Not necessarily.
12 Q I think we discussed earlier that Stern
13 does disclose pairs of electrodes, correct?
14 A Discloses a single bipolar electrode pair.
15 Q If electrodes 220, 222, 224, and 226 were
16 all contacted with tissue, do you have that in
17 mind?
18 A Okay.
19 Q And you close switch 248 and 246 and
20 switch 236 and 234, you would deliver bipolar
21 energy through multiple bipolar electrode pairs,
22 correct?

1 ATTORNEY BRIGGS: Objection. Form.
2 A That would depend on additional details.
3 Q What details?
4 A Such as the impedence between the
5 electrodes.
6 Q If the impedence was equal between the two
7 sets of electrodes and you closed switch 248 and
8 236 and switches 236 and 234, you would deliver
9 bipolar energy through multiple bipolar electrode
10 pairs, correct?
11 ATTORNEY BRIGGS: Objection to form.
12 A If I understand the hypothetical that
13 you're suggesting, you're suggesting those two
14 aspects of the hypothetical. The first one is
15 doing something contrary to Stern.
16 The second part of the hypothetical has to
17 do with something that is impossible. You can't
18 control the impedence between the electrodes.
19 It's not something you can control.
20 Because you can't control the impedence,
21 it's why it's valuable to have multiple channels.
22 So when the impedence is not even and you have

1 multiple channels, you are able to deliver current
2 to -- current effectively across a multiple bipole
3 pairs. You can't just set the impedence in any
4 actual application.
5 Q Is it outside your expertise to be able to
6 tell me what happens if you close switches 248,
7 246, 236, and 234?
8 ATTORNEY BRIGGS: Objection. Form.
9 A I think I'm -- as far as the kind of
10 matters that we're discussing here today, I think
11 I'm an expert on these matters.
12 Q And Stern itself does not disclose the
13 impedence that is present between the different
14 electrodes, correct?
15 A I would need to look at Stern.
16 Q And --
17 A I don't remember.
18 Q And so -- it's your opinion that you are
19 an expert on the matters we've been discussing
20 today, correct?
21 A I am.
22 Q And you cannot tell me whether two bipolar

electrode pairs would be formed if you closed switch 248, 246, 236, and 234; is that correct?

ATTORNEY BRIGGS: Objection. Form.

A I don't think I fully understand the -- the rationale for your question. So it's hard for me to answer precisely.

Q Well, I don't think you need to understand the rationale for my question. You need to answer my question.

And my question is: If you were to close switch 248, 246, 236, and 234, will energy be delivered through multiple bipolar electrode pairs?

ATTORNEY BRIGGS: Objection. To form.

A That would depend on additional parameters.

Q What parameters?

A One of those parameters would be the impedence between the electrodes.

Q Is it your opinion that if you closed switch 248, 246, 236, and 234, you are unable to determine if there are multiple bipolar electrode

1 pairs without understanding the impedence of
2 tissue between the bipolar pairs?
3 ATTORNEY BRIGGS: Objection. Form.
4 A I think the hypothetical that you're
5 suggesting is not consistent with Stern. And so
6 it's hard for me to understand how to answer your
7 question.
8 Q It's fine. You cannot tell me what is
9 going to happen looking at the circuit diagram in
10 Figure 15 if we close switch 248, 246, and 236 and
11 234; is that correct?
12 ATTORNEY BRIGGS: Objection to form.
13 A It would depend on additional parameters
14 that you would have to specify.
15 Q And you said the impedence of tissue; is
16 that correct?
17 A The impedence would be one parameter.
18 Q What other parameters?
19 A I would -- I'm not sure. I would have to
20 think more about it.
21 Q If you close switch 248, 246, 236, and 234
22 and you assume similar impedence, like the tissue

1 hasn't been ablated at all, and electrodes 220,
2 222, 224, 226 are all in contact with mucosal
3 tissue, are you able to tell me if that involves
4 the delivery of bipolar energy through multiple
5 bipolar electrode pairs?
6 ATTORNEY BRIGGS: Objection. Form.
7 A The -- whether there is differences in --
8 of impedence between these electrodes does not
9 depend on whether you have started to deliver
10 ablation or not. Even in the situation where you
11 have tissue where none of the tissue has been
12 ablated, you can, in fact, expect that there are
13 going to be differences in impedence between
14 different electrodes pairs.
15 Q Even if there are differences of impedence
16 between the electrode pairs, is it your opinion
17 that if you close 248, 246, 236, and 234, those
18 switches, you would not be delivering bipolar
19 energy through multiple bipolar electrode pairs.
20 ATTORNEY BRIGGS: Objection. Form.
21 A As I sit here today, I'm not sure how to
22 answer that hypothetical. I would need to think

1 more about it.
2 Q Now, if you return to your Bikson
3 Exhibit E, Mr. Briggs asked you questions about
4 that.
5 Do you recall that?
6 A Yes, should I close this?
7 Q Yes.
8 A Yes.
9 Q And you said one way you would have
10 multiple radiofrequency output channels is that
11 you would have separate voltage sources.
12 Do you recall that?
13 A I do.
14 Q Is it your opinion that the '318 patent
15 requires separate voltage sources in order to have
16 multiple radiofrequency output channels?
17 ATTORNEY BRIGGS: Objection. Form.
18 A I just want to go to the '318 to
19 understand the question.
20 I'm sorry. Can you repeat the question?
21 Q Sure. You're on Page 16 of your '318
22 declaration.

1 Do you see that?
2 A Yes.
3 Q Is it your opinion that the '318 patent
4 requires separate voltage sources in order to have
5 multiple radiofrequency output channels?
6 A No.
7 ATTORNEY COHEN: I have no further
8 questions.
9 ATTORNEY BRIGGS: We do not either.
10 (Time Noted: 5:20 P.M.)
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1 ACKNOWLEDGMENT OF DEPONENT
2 I, MAROM BIKSON, Ph.D., do hereby
3 acknowledge that I have read and examined the
4 foregoing testimony and the same is a true,
5 correct, and complete transcription of the
6 testimony given by me and any corrections appear
7 on the attached errata sheet signed by me.
8
9 _____ _____
10 (SIGNATURE) (DATE)
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CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC

I, Anita M. Trombetta, Certified Reporter, Notary Public within and for the State of New York do hereby certify: That MAROM BIKSON, Ph.D., the witness whose deposition is hereinbefore set forth, was duly sworn by me before the commencement of such deposition and that such deposition was taken before me and is a true record of the testimony given by such witness.

I further certify that the adverse party was represented by counsel at the deposition.

I further certify that the deposition of MAROM BIKSON, Ph.D., occurred at the offices of Greenberg Traurig, LLP on January 7th, 2025, commencing at 9:08 A.M. to 5:20 P.M.

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

IN WITNESS WHEREOF, I have hereunto set my

Hand this 10th day of January, 2025.

_____

Anita M. Trombetta

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