UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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FORTE BIOSCIENCES, INC.,
Petitioner
v.

UNIVERSITY OF MASSACHUSETTS
Patent Owner

_____

Patent No. 11,278,505

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# DEPOSITION OF WILLIAM DAMSKY, M.D., Ph.D.

DATE: November 20, 2023

TIME: 9:13 a.m.

HELD AT: The Blake Hotel
9 High Street
New Haven, Connecticut

By: Sarah J. Miner, RPR, LSR #238



Forte Biosciences, Inc. Exhibit - 1046
Forte Biosciences, Inc. v. University of Massachusetts - PGR2023-00014

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I N D E X


| WITNESS: | Page |
|---|---|
| WILLIAM DAMSKY, M.D., Ph.D. | |
| Direct Examination by Mr. Mills | 4 |
| Cross-Examination by Mr. Feldstein | 267 |
| Redirect Examination by Mr. Mills | 272 |


E X H I B I T S


| Deposition Exhibits | Description | Marked |
|---|---|---|
| Exhibit 1037 | Article: Jak Inhibition Prevents Bleomycin-Induced Fibrosis in Mice and Is Effective in Patients with Morphea | 39 |
| Exhibit 1038 | Twitter feed of Dr. Damsky | 42 |
| Exhibit 1039 | Article: Global dermatology talks is a virtual lecture series for equitable dissemination of dermatologic information | 48 |
| Exhibit 1040 | Screenshot of Translational research in vitiligo | 51 |
| Exhibit 1041 | Twitter posts of Dr. Damsky | 67 |
| Exhibit 1042 | Article: Dramatic Responses in Cutaneous Sarcoidosis with JAK Inhibitor | 67 |
| Exhibit 1043 | Medical Dermatology Society Annual Meeting March 24, 2022 JAK inhibitors in dermatology: what to know about these "new" kids on the block | 90 |
| Exhibit 1044 | Twitter feed of Dr. Damsky | 100 |
| Exhibit 1045 | Transcript of Dr. Damsky, Dermatology Meeting News 2023: A personalized approach to treating inflammatory skin diseases | 104 |


(The exhibits were included with the original transcript.)

WILLIAM DAMSKY, M.D., Ph.D.,
having first been duly sworn by Sarah J. Miner, LSR, a Notary Public in and for the State of Connecticut, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. MILLS:

Q Please state your name and address for the record.

**A William Damsky. And mailing address? 388 Three Corners Road, Guilford, Connecticut 06437.**

Q Thank you. My name is Jad Mills. I represent the petitioner, Forte, in this matter.

And you are here on behalf of which party?

**A University of Massachusetts, I believe.**

Q Have you been deposed before?

**A Yes.**

Q How recently?

**A I can't exactly remember the date.**

Q I am going to talk about some ground rules. So everything that we do here in the deposition needs to be recorded by the court reporter.

**A Uh-huh.**

Q So it is very important that the two of us not speak over each other, that we take turns

speaking so that the court reporter can write everything down.

**A Uh-huh.**

Q Do you agree with that?

**A I do.**

Q You have a little bit of a tendency to say uh-huh while I am still talking. It would be best to wait until I am done and then -- and then give your answer.

**A Noted. Thank you.**

Q So the way that the deposition proceeds is I will ask you questions and then you will answer my questions. It is important for you to focus on the question that I am asking so that you are responsive to that question.

Do you understand?

**A I do.**

Q If you want to talk about something else other than what I have asked about, then that is something the attorneys have to deal with. But when I ask a question, we have to focus on my question.

Does that make sense?

**A Sure.**

Q If at any point you don't understand my

question, will you tell me?

**A Yeah.**

Q Okay. So if you don't tell me that you don't understand the question, we can assume that you think that you understand it?

MR. FELDSTEIN: I am going to object to that.

THE WITNESS: I am not sure that would always be the case. I will ask for clarification when I think it is necessary.

BY MR. MILLS:

Q Okay. Is there any reason that you can't give accurate and truthful testimony today?

**A No.**

Q There is no medications or something that would impair your ability to -- to testify?

**A No.**

Q Okay. Your -- the -- the person sitting next to you is an attorney. When the attorney lodges an objection, unless he instructs you not to answer the question, you are still obligated to answer the question.

Do you understand that?

**A Yes.**

Q Okay. We can take breaks, but it is important that when I ask a question, if the question is pending you need to answer that question before we take a break.

Do you understand that?

**A Yes.**

Q Okay. What did you do to prepare for your deposition today?

**A Reviewed the relevant literature, reviewed the patent.**

Q And when you say the relevant literature, does that include anything that is not cited in your declaration?

**A I can't exactly remember.**

Q To the best of your knowledge, in preparing for your deposition, you did not review anything that is not cited in your declaration. Correct?

**A I would not say that that is true.**

Q You think that you may have reviewed something preparing for your deposition that is not cited in your declaration?

**A Knowing that I don't recognize -- remember the exact details of the literature search, I think the most relevant stuff is included.**

Q What do you mean when you say that you don't remember the exact details of the literature search?

**A Well, I mean the medical literature is very broad and has a lot of articles and a lot of things come up in research.**

Q What do you mean when you say a lot of things come up in research?

**A Sorry. When you research, when you do a literature search is what I meant.**

Q Did you do a literature search in preparation for your deposition?

**A Yeah, I mean, I reviewed the literature, yes.**

Q I am going to ask, do you know the difference between your deposition and your declaration?

**A I believe so.**

Q Okay. So the declaration is the written document that you submitted several -- a couple of months ago?

**A Uh-huh.**

Q Your deposition is what's happening today. Do you understand that?

**A Yes.**

Q So are you saying you did a literature search in preparation for your deposition today?

**A The majority of my literature search would have been related to preparing the declaration and my opinions.**

Q After you submitted your declaration in October, you then did additional literature searching then after that point. Is that correct?

**A I mean, I can't remember the exact details of what I would have done. I tried to be familiar with the material.**

Q What do you mean when you say the material?

**A The medical literature.**

Q So you think that you may have reviewed medical literature relevant to your opinions in here in this case after you submitted your declaration. Is that right?

MR. FELDSTEIN: Objection. Misstates the testimony.

THE WITNESS: I mean, I can't exactly remember.

BY MR. MILLS:

Q In preparing for your deposition today, did you review any medical literature that did not

have an exhibit number for this case at the bottom of the page?

**A I don't exactly remember.**

Q When did you start preparing for your deposition?

**A Just to clarify, that is the deposition specifically as opposed to the declaration?**

Q Yes.

**A I don't remember an exact date.**

Q So you don't know sitting here today whether or not you looked at new materials in preparation for your deposition that were not included in your declaration. Is that correct?

**A I mean, I just -- I can't remember. I can't think of any specific example off the top of my head.**

Q Okay. Do you have a general sense that you looked at materials that are not included in your declaration while you were preparing for your deposition?

**A I'm sorry. Can you repeat it.**

Q So you said you can't think of any specific examples. So I am just asking -- you -- you seem unable or unwilling to say that you didn't look at anything.

So do you have a general sense that you may have looked at something preparing for your deposition that was not cited in your declaration?

**A I just can't remember. The literature is broad. There are a lot of exhibits.**

Q One of my questions was whether you looked at things that are not exhibits in this case.

**A I just -- I don't know.**

Q So you don't know sitting here today whether or not you looked at materials when preparing for your deposition that are not exhibits in this case. Is that correct?

**A I mean, a lot of my job involves reviewing similar literature, you know, common basis. It is hard to disentangle that from what I specifically referred for today, I guess.**

Q In preparing for your deposition, did you review documents that were published before 2017 that are not exhibits in this case?

**A I mean, is there something specific that you are asking about, a specific citation or --**

Q Well, I am trying to find out what you looked at. And you don't seem to be able to tell me whether you looked at things that aren't a record in this case or not in preparing for

deposition. So now I am trying to find out -- you said, well, I read a lot of literature.

**A Uh-huh.**

Q So maybe I read something in my work and I can't remember if I did that for preparation for the deposition or not.

So now, 2017 is -- is the critical date in the case. Do you agree?

**A Yes.**

Q I am trying to figure out if you went out and looked at pre critical date information that isn't a record in this case but that you looked at in preparing for your deposition.

**A I mean, I would have reviewed the literature as a whole when I was putting together my declaration. I commonly look up the literature in this area as part of my job. I just -- it's hard -- I mean, unless it is a specific reference, it is just hard to say. I mean, it could refer to any giant number of possibilities.**

Q Did you meet with the attorneys to prepare for your deposition today?

**A Yes.**

Q How many times?

**A I don't remember the exact number.**

Q Was it more than one?
**A Yes.**
Q Was the most recent time this morning?
**A I mean, can you clarify what you mean by meet.**
Q Did you communicate with them regarding the case?
**A This morning? I don't think in any substantial way. I just said hi, you know.**
Q Did you meet with the attorneys yesterday to prepare for your deposition?
**A Yes.**
Q How long did you meet with the attorneys yesterday to prepare for your deposition?
**A I don't remember the exact number of hours. Is that what you are asking for?**
Q You can provide me with your best estimate.
**A We started midmorning and met until the afternoon.**
Q So approximately how many hours would you estimate that is?
**A Maybe six. Excuse me. I'm sorry.**
Q So yesterday, did you look at any documents to prepare for your deposition that are

not cited in your declaration?

**A I mean, I don't -- I don't remember the details. I don't remember. I don't know.**

Q You don't know whether yesterday in preparing for your deposition you looked at documents that are not cited in your declaration?

**A I mean, if there is a specific document, I might be able to help.**

Q Well, Dr. Damsky, I wasn't with you at the meeting. Right? You agree?

**A Yes.**

MR. FELDSTEIN: You did come in at one point.

BY MR. MILLS:

Q So I can't tell what you looked at. I need you to tell me if you looked at something that wasn't something in your declaration, the only way I can get that information is if you tell me.

**A We looked at a lot of exhibits. I mean, it is hard to -- we looked through a lot of stuff. It is hard to remember. I don't want to say something inaccurate.**

Q Is it hard for you to answer this question because it is hard for you to know which exhibits are cited in your declaration and which are not?

**A No.**

Q How did you go about preparing your declaration?

**A I reviewed the patent. I reviewed the literature.**

Q And when you say you reviewed the literature, what do you mean by that?

**A I reviewed the medical literature related to IL-15, IL-15 signaling a while ago.**

Q How did you find the medical literature that you reviewed in preparing for your declaration?

**A By searching on PubMed, which is a search engine for medical literature, scientific literature.**

Q You would agree there are several hundred exhibits cited in your declaration?

MR. FELDSTEIN: Object to form.

THE WITNESS: I don't remember the exact number of exhibits that are cited.

BY MR. MILLS:

Q Okay. Would it surprise you that there are a couple of hundred exhibits cited in your declaration?

**A I wasn't focused on the exact number of**

**exhibits. There were a lot.**

Q Is it your testimony that you identified each one of those exhibits through a literature search that you independently conducted?

**A No. I collaborated with counsel to identify literature, but I reviewed everything.**

Q When you say you reviewed everything, all of the exhibits that are cited in your declaration, did you review each one in its entirety prior to signing your declaration?

**A I am familiar with what is in everything -- with what's in each exhibit, sorry, to be more clear. And, yeah, everything that is in the declaration reflects my own opinions.**

Q So there is a little bit of a difference between what I asked and what you answered, so I want to follow up on that.

So I asked if you reviewed each of those hundreds of exhibits in their entirety before you signed your declaration. You said you are familiar with what is in them.

So what is the difference between your answer and my question?

MR. FELDSTEIN: Objection.

THE WITNESS: There is a large number

of exhibits. In general, I reviewed them in the level of detail that I thought was appropriate. But it is hard to remember for each specific exhibit what level of detail that was. Many I did read in their entirety.

BY MR. MILLS:

Q How many hours did you spend preparing your declaration?

**A I don't remember.**

Q Was it more than 10?

**A Yeah.**

Q Was it more than 20?

**A Yeah.**

Q Was it more than 30?

**A I mean, it is hard to remember off the top of my head. Probably.**

Q Was it more than 40?

**A I just don't have the exact number in front of me.**

Q Was it as many as 50?

**A It is hard to say for sure. It is possible.**

Q Is it possible that you spent 60 hours preparing your declaration?

**A We're getting into -- it's -- I don't know. I just don't know.**

Q Is it possible that you spent 70 hours preparing your declaration?

**A I don't know.**

Q I am trying to figure out what the boundary is.

Do you think it is possible you spent a thousand hours preparing your declaration?

**A No.**

Q So we know it is not a thousand. We know it is probably more than 30. Do you think you spent more than a hundred hours preparing your declaration?

**A Honestly, I don't know.**

Q Do you think it is possible you spent more than 200 hours preparing your declaration?

**A Probably not, no.**

Q Do you think it is possible you spent more than 150 hours preparing your declaration?

**A Recognizing I don't have the numbers committed to memory, I don't think so.**

Q So in your best estimate, you spent somewhere between 30 and 100 hours preparing your declaration. Is that fair?

MR. FELDSTEIN: Objection. Misstates the testimony.

THE WITNESS: I just -- I don't know the number of hours off the top of my head.

BY MR. MILLS:

Q Yeah, so I didn't ask for the exact numbers off the top of your head. I am just trying to get your best estimate. You said you think it is possible you spent more than 30 hours?

**A (Witness shakes head yes.)**

Q You said you think it is possible you spent more than 30 hours. You said it's not possible you spent 150 hours.

**A Uh-huh.**

Q You think it's possible -- or you don't know whether or not it's possible you spent a hundred hours.

So what is your -- your best estimate as to how many hours you spent preparing your declaration?

MR. FELDSTEIN: Objection.

THE WITNESS: Honestly, I just don't know how many hours I spent. It is not something I thought about. I reviewed the

references. I reviewed the patents.

BY MR. MILLS:

Q Did you charge Finnegan Henderson for the hours that you spent preparing the declaration?

**A Yes.**

Q What rate did you charge them?

**A I believe, to the best of my recollection, it was $750 an hour.**

Q So if you charged them $750 an hour and spent, if you did, 30 hours, can you tell me about how much that would have been?

**A So 750 times 30, 21,000, maybe 23,500. 23,500.**

MR. FELDSTEIN: Object. Math tests aren't fair.

BY MR. MILLS:

Q So maybe 22,500?

**A I could write it out and actually do the multiplication.**

Q But that sounds about right to you. Okay. And this -- maybe this one will be easier. If you had spent a hundred hours, then how much would you have charged?

**A Recognizing I am not sure that I did charge for a hundred hours. 100 times 750, 75,000.**

Q So hearing it in dollar terms, do you think it is unlikely that you charged $75,000 for preparing the declaration?

**A I mean, I don't have the number in front of me.**

Q So as you sit here today, it is possible that you charged $75,000 for your time spent up until the day you signed the declaration?

MR. FELDSTEIN: Objection.

THE WITNESS: I'm sorry. Can you ask the question again.

BY MR. MILLS:

Q As you sit here today, it is possible that you charged Finnegan $75,000 for your time spent up until the day you signed the declaration?

MR. FELDSTEIN: Objection.

THE WITNESS: I would have charged the hourly rate that I normally charge for consulting. That is what I would have charged.

BY MR. MILLS:

Q You can't rule out that the charge was as much as $75,000 for preparing the declaration. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I don't have the number in front of me.

BY MR. MILLS:

Q Because of that, you can't rule that out. Is that correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I don't think I can rule it in or out. I just don't know.

BY MR. MILLS:

Q After you signed your declaration, approximately how much time have you spent working on this case?

**A I am sorry. I just don't have the numbers.**

Q Do you have any estimate as to how much time you spent?

**A More than 20.**

Q Was it more than 50?

**A I don't believe so.**

Q Was your rate that you charged for your time the same after you signed your declaration as before?

**A Yes.**

Q What about for today, is the rate that you charged for your time the same during your

deposition as it was when you were preparing your declaration?

**A As far as I know.**

Q Who pays your bills?

**A I'm sorry. Can you clarify.**

Q Who pays for your bills for your time spent in this matter?

**A I don't remember.**

Q Okay. Is it your understanding that the money comes from University of Massachusetts?

**A I don't -- I don't know, actually.**

Q As you sit here today, it is possible the University of Massachusetts is not the party paying your bills for your time in this case?

MR. FELDSTEIN: Objection.

THE WITNESS: I don't remember. I don't remember who the checks come from.

BY MR. MILLS:

Q Are you paid in the form of a check?

**A I don't -- I don't remember. I don't remember.**

Q In your declaration, you say that you are here as an independent expert.

Do you remember that?

**A Can you point to me to exactly where you**

**are talking about?**

Q Yeah. I mean, I think it is one of the first things you said. Oh, you have a copy there.

**A Yeah.**

Q Why don't you go ahead and tell me what you have in front of you.

**A This is a copy of my declaration.**

Q Okay. Does the copy -- is the copy of your declaration in front of you marked Exhibit 2005?

**A Yes.**

Q You can see the exhibit number and the case name at the bottom of the page?

**A Yes.**

Q Is that a complete copy of your declaration?

**A Yes, it appears to be.**

Q Does it include an appendix at the end?

**A Yes, it does.**

Q Okay. And does it include your signature?

**A Yes, it does.**

Q You signed this declaration on October 3rd, 2023?

**A Yeah. As best I can remember, yes.**

Q And you understood when you signed the

declaration that all the statements you made herein are true, that all statements made on information are believed to be true, and that statements made with the knowledge -- are made with the knowledge that willful false statements and the like are made punishable by fine or imprisonment or both?

**A Yes, that is what it says here on the cover.**

Q And you understand also that today in the deposition, likewise you are subject to penalties of perjury if you do not tell the truth?

**A Understood.**

Q Paragraph 1 of your declaration. You see there where you say you were retained by Finnegan on behalf of patent owner, University of Massachusetts as an independent expert?

**A Yes.**

Q What does it mean to you that you are an independent expert?

**A That I assess the material objectively, summarize it, and express my opinions on the matter.**

Q If you were an employee of the University of Massachusetts, would you consider yourself to be an independent expert?

MR. FELDSTEIN: Objection.
THE WITNESS: I am not an employee of the University of Massachusetts.
BY MR. MILLS:
Q If you were -- if you had been an employee of the University of Massachusetts when you signed your declaration, would you have said you were an independent expert?
MR. FELDSTEIN: Objection. Beyond the scope and calls for speculation.
THE WITNESS: I am not sure I'm an independent in the situation. It is hard to say because I haven't been.
BY MR. MILLS:
Q So in your view, it is possible that even being an employee of the University of Massachusetts that you could consider yourself an independent expert regarding a patent owned by the University of Massachusetts?
MR. FELDSTEIN: Object to form. Beyond the scope.
THE WITNESS: I am sorry. I am having a hard time answering because I am not exactly sure what you are asking.
BY MR. MILLS:

Q You used the word independent expert.
**A Yes.**
Q And as I understand it, you are saying that you are independent of the University of Massachusetts, the patent owner in this case. Is that correct?
MR. FELDSTEIN: Objection.
THE WITNESS: Can you define independent of the University of Massachusetts.
BY MR. MILLS:
Q Well, you used the phrase. So I am trying to understand what meaning that you had when you signed the declaration under oath subject to penalties of imprisonment saying that you are an independent expert. What did you mean when you said that?
MR. FELDSTEIN: Objection.
THE WITNESS: I think I already answered that, didn't I? Independent expert.
BY MR. MILLS:
Q So when you wrote that you were an independent expert, did that independence include that you are not an employee of the University of

Massachusetts?

**A I don't know that it is phrased that way.**

Q Before you signed the declaration saying that you were an independent expert, did you evaluate whether you received any research funding from the University of Massachusetts?

**A I have received research funding from many different parties. I don't recall receiving any from the University of Massachusetts, but I can't remember absolutely for sure.**

Q Is that an evaluation that you performed prior to signing your declaration saying that you are an independent expert?

MR. FELDSTEIN: Objection.

THE WITNESS: To the best of my knowledge, yeah.

BY MR. MILLS:

Q Before signing your declaration saying that you are an independent expert, did you evaluate whether you have collaborated with the University of Massachusetts in any research?

**A Yes.**

Q What was your conclusion of that evaluation?

**A In terms of whether I can independently**

**evaluate a patent held by the University of Massachusetts.**

Q No. My question is whether you evaluated whether you had collaborated with the University of Massachusetts in any research.

MR. FELDSTEIN: Objection.

THE WITNESS: I mean, I collaborate with a lot of people in many institutions, but I have collaborated with investigators at the University of Massachusetts.

BY MR. MILLS:

Q Okay. So when you wrote your declaration and signed it under penalties of perjury and said you were an independent expert --

**A Uh-huh.**

Q -- you did that with the knowledge that you had collaborated with investigators at the University of Massachusetts. Correct?

**A Yes.**

Q Which investigators at the University of Massachusetts had you collaborated with by the time that you signed your declaration?

**A I can think of some. I don't know if my recollection is an exhaustive list. I am happy to look at anything and tell you about it.**

Q So go ahead and tell me the ones you can think of.

**A Jillian Richmond. I can't remember if I published with John Harris. I can't think of anyone else beyond that, but I can't rule it out for sure.**

Q Okay. Who is Jillian Richmond?

**A Who is she?**

Q Yes.

**A A scientist at the University of Massachusetts.**

Q How do you know Jillian Richmond?

**A Through working in the field of dermatology.**

Q When did you first meet Jillian Richmond?

**A I don't remember.**

Q What part of your career were you in when you first interacted with Jillian Richmond?

**A I recall I met her before the COVID pandemic, I think. I don't remember the exact details, like a specific month or year.**

Q The COVID pandemic, that is approximately February or March of 2020?

**A Uh-huh.**

Q So sometime before February or March 2020

is when you remember first interacting --

**A Yes.**

Q -- with Jillian Richmond?

**A Yes.**

MR. FELDSTEIN: Let him finish the question.

THE WITNESS: Oh, I'm sorry.

BY MR. MILLS:

Q And how is it that you first came to interact with Jillian Richmond?

**A That, I don't remember. I am not sure.**

Q Tell me what you do remember about your first interactions with Jillian Richmond regarding the circumstances? Were you introduced by someone? Anything around those circumstances that you recall.

**A It was probably by email at first that I interacted with her.**

Q Do you recall whether you were introduced through a mutual association that you participated in?

**A I don't think so. I just don't remember.**

Q So you believe that you collaborated with Jillian Richmond by being coauthors on a publication. Is that correct?

**A Yes. We have published a paper together.**

Q To the best of your knowledge, was there more than one paper that you published with Jillian Richmond?

**A I would have to double-check. I can think of one.**

Q What is the one you can think of?

**A It is a publication about a disease called morphea, M-O-R-F-E-A [sic].**

Q Okay. You also mentioned John Harris. Tell me how you first met John Harris.

**A I don't remember. Maybe at a dermatology meeting. I just don't recall.**

Q Did you come to interact with John Harris through your relationship with Jillian Richmond?

**A I mean, beyond them both being at the University of Massachusetts, I don't -- I don't think so.**

Q Is it your understanding that Jillian Richmond and John Harris are at the same stage of their careers?

MR. FELDSTEIN: Objection.

THE WITNESS: Do you mean like their academic title or something else?

BY MR. MILLS:

Q Well, let's start with that, their academic titles.

**A I am not sure what their academic titles are.**

Q Do you know whether Jillian Richmond has tenure at the University of Massachusetts?

**A I don't want to say something inaccurate. I am not sure. I don't know.**

Q Do you recall congratulating Jillian Richmond when she achieved tenure at the University of Massachusetts?

**A No, I actually don't.**

Q Would it surprise you to find out that you did that?

**A No, I wouldn't be surprised. I tend to be very congratulatory of people that are promoted in general.**

Q So it is your belief that you collaborated with John Harris in a publication while he was an employee of the University of Massachusetts?

**A If I remember correctly, I believe he was also an author, although I can't remember for sure, on that same paper that I mentioned about morphea.**

Q When you collaborated with Jillian Richmond and John Harris together, were you aware

that they were inventors of the '505 patent that is the subject of this proceeding?
MR. FELDSTEIN: Objection.
THE WITNESS: No.
BY MR. MILLS:
Q Did you review the disclosures in that publication?
MR. FELDSTEIN: Objection.
THE WITNESS: I can't remember what they were.
BY MR. MILLS:
Q Is it your practice to review the disclosures in the papers that you publish?
**A Usually more the editors of the journals will focus on that.**
Q You don't have a practice of reviewing the disclosures in the articles that you publish?
**A Usually I am focused on reviewing the science. Maybe I will glance at them, maybe I won't. I don't remember in this case.**
Q What is the purpose of disclosures in academic publications?
MR. FELDSTEIN: Objection.
THE WITNESS: The purpose of disclosures is to identify nonacademic

partners of the authors.
BY MR. MILLS:
Q What is the purpose of identifying nonacademic partners of the authors in publications?
MR. FELDSTEIN: Objection.
THE WITNESS: So you know the whole picture, I guess.
BY MR. MILLS:
Q In your academic publications, have you disclosed sources of financing?
**A Yes.**
Q And you understand that it is important to disclose the sources of financing so that the public can evaluate potential bias that could have arisen based on financing?
MR. FELDSTEIN: Objection.
THE WITNESS: I would just say it is a standard practice to do so. I don't know that it implies bias necessarily.
BY MR. MILLS:
Q When you signed your declaration in this case, you were aware that Jillian Richmond and John Harris at the University of Massachusetts, with whom you had collaborated, were the inventors of

the '505 patent. Correct?

**A I mean, yeah, I did realize that when I looked at the patent, yeah.**

Q In testifying that you are an independent expert, you said that you evaluated your relationship with the University of Massachusetts. Is that correct?

**A Yes.**

Q Did you evaluate whether you had relationships with any other entities that might pose a conflict for your testimony in this case?

**A Yes.**

Q What other entities did you evaluate?

**A I received funding from many independent companies, so I would have evaluated them.**

Q Which companies did you evaluate?

**A I have got a disclosure statement. I always have to review it. I don't remember everything that is on it. I would have to do the same here.**

Q When you mean [sic] you have a disclosure statement, what do you mean?

**A Similarly to what we were discussing previously. It is standard practice to disclose nonacademic sources of funding in the medical**

**literature.**

Q Did you produce a copy of that disclosure statement in this case?

**A I don't remember.**

Q When you signed your declaration in this case, were you aware that John Harris started a company that is developing technology subject to the '505 patent?

MR. FELDSTEIN: Objection.

THE WITNESS: I mean I was able to piece that together, yes.

BY MR. MILLS:

Q What is the name of that company?

**A I believe it is Villaris.**

Q When you signed your declaration on October 3rd, 2023, were you aware that Villaris holds a license to the '505 patent that is at issue?

**A I believe so.**

Q When did you first become aware of the company that is called Villaris?

**A That, I don't remember.**

Q It was sometime before you signed your declaration. Correct?

**A Yes.**

Q Did you ever discuss the Villaris company with John Harris?

**A No.**

Q Have you ever discussed this case or anything having to do with this case with John Harris?

**A No.**

Q Have you ever discussed this case or anything having to do with this case with Jillian Richmond?

**A No.**

Q What is Global Derm Talk [sic]?

**A Global Derm Talks is an online dermatology-focused seminar series.**

Q Are you one of the founders of Global Derm Talk?

**A Yes.**

Q Jillian Richmond is also one of the founders of Global Derm Talk. Correct?

**A Yes.**

Q And John Harris is one of the persons who has presented in Global Derm Talk. Correct?

**A I believe he has. We have had a lot of presenters.**

Q You attended, together with Jillian

Richmond, the Global Derm Talk presented by John Harris. Correct?

**A I believe so.**

Q Was it your idea or Jillian's idea to have John Harris present at the Global Derm Talk?

**A I don't remember that.**

MR. MILLS: We need to mark an exhibit. We're going to mark it 1037.

(Exhibit No. 1037 marked for identification.)

MR. FELDSTEIN: Object to Exhibit 1037. Relevance, authenticity, and reserve all other objections.

BY MR. MILLS:

Q I have handed you what has been marked as 1037.

Do you have that?

**A Yes.**

Q What is Exhibit 1037?

**A Exhibit 1037 is a publication about using a class of medications called JAK inhibitors on a disease called for morphea, M-O-R-P-H-E-A.**

Q The authors of this publication include yourself, as well as Jillian Richmond and John Harris, the inventors of the '505 patent. Correct?

**A Yes.**

Q Looking on the first page, at the bottom, you agree that this article was accepted -- sorry -- that the accepted manuscript was accepted online on the 16th of January, 2020?

MR. FELDSTEIN: Objection.

THE WITNESS: Yeah, it says accepted manuscript published online 16 January, 2020.

BY MR. MILLS:

Q Since it was published in January of 2020, you all submitted it sometime before that. Is that correct?

**A Yes.**

Q This is the article that we were talking about earlier where you said that you published an article where you were collaborating with John Harris and Jillian Richmond. Is that correct?

**A Yes.**

Q Is it fair to say that your collaboration with John Harris and Jillian Richmond extends at least as far back as 2019?

**A I mean, I don't recall the exact date we started working on this.**

Q So since it was published on the 16th of

January, 2020, is it your expectation that you began collaborating with them in the year 2020 or earlier than that?

**A It may have been late 2019.**

Q Please take a look at page 1448 on Exhibit 1037. Do you see the heading that says Conflict of Interest?

**A Yes.**

Q At the bottom of that, it says JMR and JEH are inventors on patent application #62489191, diagnosis and treatment of -- how do you pronounce that word?

**A Vitiligo.**

Q -- which covers the targeting -- which covers targeting IL-15 and Trm for the treatment of vitiligo?

**A Do I see it?**

Q Yes.

**A Yes.**

Q Who is JMR?

**A Jillian Richmond.**

Q Who is JEH?

**A John Harris.**

Q So if you reviewed the conflict of interest statement in your collaborative

publication with John Harris and Jillian Richmond, then you would have been aware that they were inventors on patent for -- that they say covers targeting IL-15 and Trm for the treatment of vitiligo. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I don't remember if I read it or registered at that point.

BY MR. MILLS:

Q You can set that document aside for the moment.

(Exhibit No. 1038 marked for identification.)

MR. FELDSTEIN: We'll object to Exhibit 1038 on relevance and authenticity, and reserve other grounds.

BY MR. MILLS:

Q Actually, I should ask one more question about Exhibit 1037.

You agree that Exhibit 1037 was published by the Journal of Investigative Dermatology in Volume 140 in 2020. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: That is the publication date that is listed.

BY MR. MILLS:

Q I just want to make sure, because your counsel is objecting maybe it is inauthentic, maybe it is fabricated. I just want to make sure you agree that this document is a real document that you published in collaboration with the inventors of the '505 patent.

MR. FELDSTEIN: Objection.

THE WITNESS: It was an unrelated collaboration.

BY MR. MILLS:

Q So I am not asking whether it was related or unrelated. I just want to make sure that there is no question as to the authenticity of this publication in which you collaborated with the inventors of the '505 patent?

MR. FELDSTEIN: Objection.

BY MR. MILLS:

Q Are you contesting the authenticity of this document?

MR. FELDSTEIN: Objection.

THE WITNESS: The article appears to be the data that was published.

BY MR. MILLS:

Q Okay. Looking now at Exhibit 1037 [sic].

MR. FELDSTEIN: 38.

MR. MILLS: Yes. Thank you.

BY MR. MILLS:

Q Do you know what X is?

**A Yes.**

Q That actually might be one of the harder questions for you to answer today because it used to be called Twitter.

Is your handle on Twitter is @billdamsky. Is that correct?

**A Yes.**

Q And Exhibit 1038 is a printout of a tweet that you sent out on September 22, 2020?

MR. FELDSTEIN: Objection.

THE WITNESS: Yeah, it appears to be.

I don't remember the exact tweet.

BY MR. MILLS:

Q In this tweet on September 22, 2020, you say, excited to announce Global Derm Talks. Correct?

**A Yes.**

Q At the bottom of that tweet, there is a flier and there's pictures of three people at the bottom.

Do you see that?

**A Yes.**

Q On the left-hand side is a picture of you. Correct?

**A Yes.**

Q On the right-hand side, there is a picture of a lady. Who is that?

**A Jillian Richmond.**

Q In your tweet, you say team, and then there is a handle that says @tcelltracker?

**A Yes.**

Q And who is T-cell Tracker?

**A I believe it is Jillian Richmond.**

Q And so Exhibit 1038 is you and Jillian Richmond announcing your collaboration together for the Global Derm Talks. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I wouldn't necessarily say we were collaborating. I mean, it is very common to give talks and organize talks in dermatology. And sometimes you happen to work with one person, sometimes you happen to work with another person.

BY MR. MILLS:

Q In this case for the Global Derm Talks, you and Jillian Richmond are two of the founders of

Global Derm Talks. Correct?

**A Amongst others, yes.**

Q The other person that you -- the other handle next to T-cell tracker is P-H-I-A 34?

**A Uh-huh.**

Q Who is that?

**A That is a medical student that was helping us at the time.**

Q So that was somebody that was a subordinate to you?

**A No. We view everyone on the team as equal.**

Q Is it somebody that works in your lab?

**A No.**

Q Is it somebody that works in Jillian Richmond's lab?

**A No.**

Q Is it somebody that works at the University of Massachusetts?

**A I don't think so, no. I am not aware of anything she has done with the University of Massachusetts, no.**

Q So to summarize so far. In January 2020, you published a paper together with Jillian Richmond and John Harris, and then in September of

that year you and Jillian joined forces together to launch Global Derm Talks. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I work and collaborate with a lot of people.

BY MR. MILLS:

Q So when we started the deposition, if you will remember I said that when I ask you a question it is important for you to focus on my question and be responsive to it.

So just now I asked you specifically about the timeline. In January 2020, you published a paper together with Jillian Richmond and John Harris. And then in September of that year, you and Jillian Richmond joined forces together to launch Global Derm Talks.

And your answer was, I work and collaborate with a lot of people. So I didn't ask whether you worked and collaborate with a lot of people. I asked you something different.

So can you please focus on my question, or would you like me to ask it again?

**A The first part of the question was did I publish the article in 2020?**

Q So I am asking about the timeline between

the two events. I am going to start the question over. Okay?

**A Okay.**

Q In January 2020, you published a paper together with Jillian Richmond and John Harris, and then in September of that same year, you and Jillian Richmond joined forces together to launch Global Derm Talks. Correct?

MR. FELDSTEIN: Objection to form. Misstates the testimony.

THE WITNESS: I would say the article was published in 2020. And this screenshot appears to show an announcement for the seminar series in 2020, although I don't remember the exact timeline myself.

BY MR. MILLS:

Q Global Derm Talks seminars occur twice monthly for one hour via a Zoom webinar. Correct?

**A For most months, yeah.**

Q And was it your practice to attend those twice monthly one-hour Zoom webinar Global Derm Talk presentations?

**A Generally, yes.**

**(Exhibit No. 1039 marked for identification.)**

BY MR. MILLS:

Q Handing you Exhibit 1039.

MR. FELDSTEIN: Object on at least relevance and authenticity, and reserve on other objections.

BY MR. MILLS:

Q Exhibit 1039 lists William Damsky, M.D., Ph.D. and Jillian Richmond, Ph.D. as coauthors. Correct?

**A Among others, yes.**

Q The title is Global Dermatology Talks is a virtual lecture series for equitable dissemination of dermatologic information. Correct?

**A Yes.**

Q This article was published in Volume 9 of JAAD Institute. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: Yes, JAAD International, JAAD.

BY MR. MILLS:

Q It was published in 2022?

MR. FELDSTEIN: Objection.

THE WITNESS: Yeah, it appears to be.

BY MR. MILLS:

Q Please take a look at page 118 of Exhibit

1039, on the right-hand side under the heading Conflicts of Interest.

**A Yes.**

Q Do you see under there that this publication that you coauthored with Jillian Richmond also identifies that same patent application for the treatment of vitiligo as before under Dr. Richmond's conflicts of interest?

**A Yes.**

Q If you had reviewed the conflicts of interest in your joint publication with Dr. Richmond in the JAAD publication, then you would have been aware at that time that Dr. Richmond is an inventor of that patent?

MR. FELDSTEIN: Objection.

THE WITNESS: I mean, to the extent I read it and thought about it. I publish with a lot of authors that have a lot of conflicts of interest. I'm not sure if this stood out to me or not.

BY MR. MILLS:

Q So still at the time of this publication in 2022, you don't recall whether or not at that time you were aware of Dr. Richmond's conflict regarding the '505 patent?

MR. FELDSTEIN: Objection.

THE WITNESS: It is so hard to remember the timeline because I work with so many people that have so many conflicts. It just -- I don't remember when I became aware of this.

(Exhibit No. 1040 marked for identification.)

BY MR. MILLS:

Q I should ask you on Exhibit 1039, do you have any doubts as to the authenticity of that publication?

MR. FELDSTEIN: Objection.

THE WITNESS: It appears to be the publication.

BY MR. MILLS:

Q I am handing you Exhibit 1040.

MR. FELDSTEIN: Object to Exhibit 1040, relevance and authenticity, and reserve on other grounds.

BY MR. MILLS:

Q So looking at the first page of Exhibit 1040, there are pictures of four handsome people on the right-hand side -- sorry, three people. Let me start my question again.

We are looking at the first page of Exhibit 1040. On the right-hand side, there are three individuals there.

Do you see that?

**A Yes.**

Q Who is the individual on the top?

**A John Harris. Excuse me.**

Q That is John Harris, the inventor of the '505 patent?

**A Yes, but recognizing that there are dozens of other people that I have also had right above me on the introduction side.**

Q So John Harris is at the top. And then right underneath John Harris, who is that handsome individual?

**A That is me.**

Q And then below you, who is the lady there?

**A That is Jillian Richmond.**

Q Okay. And if you look underneath the video, it is titled Global Dermatology Talks February 22, 2021, John Harris.

Do you see that?

**A Yes.**

Q The title of this doc is Translational Research in Vitiligo: Launching a new era of

targeted treatments. Correct?

**A Yes.**

Q Seeing Exhibit 1040, do you have any doubt now that you attended John Harris's Global Dermatology Talk together with Jillian Richmond on February 22nd, 2021?

**A That appears to be the date, and yes, I was there.**

Q Please take a look at page 2 of Exhibit 1040.

**A Yes.**

Q There is a slide there that says Future Studies.

Do you see that?

**A Yes.**

Q And on that slide, there is a logo for Villaris Therapeutics.

Do you see that?

**A Yes.**

Q So you would agree that at least as of February 22, 2021, that you were aware that John Harris had an affiliation with Villaris Therapeutics. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I would say that in any

given week, whether it is by Global Dermatology Talks or in person or otherwise, I may see five or 10 talks and attract a lot of people. It is hard to remember all the details from any individual one.

BY MR. MILLS:

Q So again, I didn't ask you how many dermatology talks -- Global Dermatology Talks you have attended or how many people are attracted by those talks. I am just asking you whether seeing the presentation on page 2 of Exhibit 1040 reminds you that as of that date, John Harris was affiliated with Villaris Therapeutics?

MR. FELDSTEIN: Object to form.

THE WITNESS: The point that I was trying to make is not about how many attend Global Dermatology Talks but how many similar talks I attend or run on a weekly basis. And so I just can't remember the detail of every last talk.

BY MR. MILLS:

Q So I haven't asked you about the detail of every last --

MR. FELDSTEIN: Counsel, let him

finish.

BY MR. MILLS:

Q Were you done?

**A Yes.**

Q Okay. I haven't asked you about the detail of every last talk. I am just asking you whether as of February 22, 2021, you were aware that John Harris was affiliated with Villaris Therapeutics?

MR. FELDSTEIN: Object to form.

THE WITNESS: I see what you are showing me on the slide. Whether that was something I actively thought about or remembered at the time or stuck with me at the time, I don't remember.

BY MR. MILLS:

Q I am going to ask you a cytokine question. Are you excited?

**A Okay.**

Q On the slide, there is a big red circle. What does that big red circle represent?

**A The big red circle at the bottom right?**

Q Yes.

**A A cell, I believe.**

Q And what words can you use to describe --

well, let me start over.

What is the rectangular pink image that is on top of that?

**A Probably another cell.**

Q Okay. So what language can you use to differentiate between those two cells? What do we know about the red cell?

MR. FELDSTEIN: It is red.

THE WITNESS: It is red and round.

BY MR. MILLS:

Q What do we know about what receptors are expressed by the red cell?

MR. FELDSTEIN: Object to form.

THE WITNESS: The ones labeled IL-15R beta. One is labeled gamma C, G-A-M-M-A, C.

BY MR. MILLS:

Q So the red cell expresses IL-15R beta and gamma C receptors. Is that correct?

**A Yes, that is what is depicted.**

Q In this case, they are depicted in a heterodimeric complex. Is that correct?

**A Not necessarily.**

Q What would you say?

MR. FELDSTEIN: Objection.

THE WITNESS: I guess you are referring to the cytokines in that specific cell. There's two different receptor components. So I suppose you could refer to them as a dimer on that cell -- heterodimer on that cell.

BY MR. MILLS:

Q If we are talking about the red cell --

**A Yeah.**

Q -- you agree that in this image the red cell is not depicted as it's self-expressing a trimeric receptor. Correct?

**A Yes, that appears to be the case.**

Q The red cell is instead depicted as expressing the heterodimeric IL-15 receptor. Correct?

**A Yes.**

Q The pink cell that is rectangular, that cell is expressing an IL-15 alpha receptor. Correct?

**A Yes.**

Q And there is an IL-15 being transpresented by the alpha expressing cell to the beta gamma expressing cell. Correct?

**A That is implied, yes.**

Q Is that -- at least as far as it goes, is that an accurate depiction of transpresentation of IL-15 to an immune cell?

**A Yeah, it appears to be.**

Q Inside the red cell, there are two labels. Do you see those?

**A Yes.**

Q What are the two labels?

**A JAK1 and JAK3.**

Q Are you familiar with JAK1 and JAK3?

**A Yes.**

Q In this figure on page 2 of Exhibit 1040, is JAK1 associated with a particular IL-15 receptor?

**A Yeah, it looks like it is associated with IL-15R beta.**

Q And is that an accurate depiction insofar as it is described here?

MR. FELDSTEIN: Objection.

THE WITNESS: Generally, JAK1 is known to associate with that receptor. Is that what you are asking?

BY MR. MILLS:

Q Are you aware that IL-15R beta signaling activates JAK1?

**A It can, yes.**

Q Before the critical date in 2017, would a person of ordinary skill in the art have been aware that IL-15R beta signaling activates JAK1?

MR. FELDSTEIN: Objection.

THE WITNESS: Yeah, I think so, yeah.

BY MR. MILLS:

Q Now, let's talk about JAK3. Are you -- you are also familiar with JAK3. Correct?

**A Uh-huh.**

Q In this image, JAK3 is associated with the gamma C receptor. Correct?

**A Yes.**

Q That is because the gamma C receptor signaling activates JAK3. Is that correct?

MR. FELDSTEIN: Objection.

THE WITNESS: It is known to be able to do that, yes.

BY MR. MILLS:

Q That was known before the critical date in 2017 to a person of ordinary skill in the art. Correct?

**A Yes.**

Q For each of these receptors, the opposite is not true. Correct? IL-15R beta does not

activate JAK3. Correct?

**A I don't know that it can. I would have to review the literature.**

Q Does gamma C signaling activate JAK1?

**A Again, I would have to review the literature. I don't think that is the predominant mode.**

Q I want to ask this. IL-15R beta, that's also called CD122?

**A Correct.**

Q And the gamma C is also called CD132. Correct?

**A Correct.**

Q Now, I want to ask you about IL-15R alpha.

**A Okay.**

Q Do you know whether IL-15R alpha initiates cytoplasmic JAK signaling in the cell on which it is expressed?

**A I would have to review the literature to be sure, but I believe generally not.**

Q And you would agree with me that the IL-15R alpha on the IL-15 presenting cell does not itself cytoplasmically -- cytoplasmically signal in the other cell. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I mean, it is not depicted here. I can't rule it out entirely.

BY MR. MILLS:

Q So you can't rule out that a -- well, let me ask a question. The IL-15R alpha on the top cell, the upper cell, it is located in the membrane of the top cell. Correct?

**A Yeah.**

Q And it is not located in the membrane of the red cell, correct, the IL-15 alpha?

**A The IL-15R alpha. Not in this picture.**

Q Okay. So you think it is possible that in this transpresentation that is depicted here that the IL-15R alpha in the membrane of the top cell is in its cytoplasmic domain initiating JAK signaling in the other cell?

**A Can you ask that again.**

Q My question may be confusing.

But what I'm trying to get at is, the alpha is in the membrane of one cell, it is not in the membrane of the red cell. There is no cytoplasmic signaling from the alpha going on in the red cell as depicted here. Correct?

**A Not in this picture.**

Q Okay. When you say not in this picture, do you have in your mind a scenario in which an alpha receptor embedded in one cell is itself cytoplasmically signaling inside a different cell?

**A Let me try to understand. The IL-15 receptor alpha from one cell is signaling inside another cell? Is that the question?**

Q Whether it is cytoplasmically signaling inside a different cell?

**A Well, it is inducing signaling in another cell.**

Q When you say it is inducing signaling, you mean by presenting IL-15 to the receptors on that cell?

**A That is the example shown here, yes.**

Q So let's step back a little bit. I don't think you are confused about this, but I just want to make sure that the record is clear. For these receptors, they have an extracellular domain. Correct?

**A Yes.**

Q They also have a cytoplasmic domain. Correct?

**A Yeah. I am not sure how big the IL-15 receptor alpha cytoplasmic domain is, but I believe**

**it has one.**

Q Okay. So for the beta and gamma receptors, when those bind to IL-15, their cytoplasmic domain initiates JAK signaling, either 1 or 3. Correct?

**A Yes.**

Q That is all happening in the red cell. Correct?

**A Yes.**

Q Okay. You said you weren't sure if IL-15R alpha has a cytoplasmic domain, but if it does, you agree that in this presentation its cytoplasmic domain is not in the red cell. Correct?

**A Correct.**

Q So we can agree that in this presentation, the IL-15R alpha is not doing any cytoplasmic signaling in the red cell using its cytoplasmic domain?

MR. FELDSTEIN: Objection.

THE WITNESS: I mean, as it is depicted here.

BY MR. MILLS:

Q Right. On the right-hand side of page 2 of Exhibit 1040, there is a heading that says Transcript.

Do you see that?

**A Yes.**

Q And the image of the person speaking at this moment is still John Harris. Correct?

**A Yes.**

Q In that transcript, about middle of the way through, it says, We wrote the protocol and got things moving.

Do you see that?

**A Oh, yeah. Yes.**

Q But I had to recuse myself from this trial because I was approached by venture capital --

Do you see that?

**A Yes.**

Q -- given the opportunity to start our own company called Villaris Therapeutics.

Do you see that?

**A Yes.**

Q Then two lines -- three lines below that, it says, We actually think targeting the receptor beta chain is a much better approach.

Do you see that?

**A Yes.**

Q IL-15 is very highly expressed throughout all tissues of the body, and so it is very

difficult to saturate IL-15 with antibody to block the signaling.

Do you see that?

**A Yes.**

Q And then taking a look at the next page. Do you see that the time stamp now is 5742 out of 5742?

**A Yes.**

Q Okay. So this is a picture of you at the end of John Harris's Global Dermatology Talk February 22, 2021. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: It appears to be.

BY MR. MILLS:

Q Do you have any reason to doubt that you were present from the beginning to the end of Dr. Harris's February 22, 2021 Global Dermatology Talk?

**A I can't remember if I was there for the whole thing. We do a lot of these. Oftentimes, I have other things going on. I don't remember.**

Q So based on Exhibit 1040, you can see that you were there at the beginning, you can see that you were there at the end. You don't specifically recall leaving? You are saying it is possible?

MR. FELDSTEIN: Objection.
THE WITNESS: Yeah, I don't know. It was a couple of years ago. We do these twice a month. Sometimes I have to step away.
BY MR. MILLS:
Q If we were to watch that video right now and -- to see your face from beginning to end, would you agree you hadn't left the meeting?
MR. FELDSTEIN: Objection.
THE WITNESS: I usually turn off my video at the beginning.
BY MR. MILLS:
Q So my question is: If we watched the video and you were there the entire time, you wouldn't dispute that you were there the entire time. Correct?
MR. FELDSTEIN: Objection.
THE WITNESS: Yeah, I mean, if I was on camera the whole time I was on it. I usually turn off my video, though.
BY MR. MILLS:
Q Why do you turn your video back on at the end?
**A Generally, to ask questions.**

Q Do you recall asking any questions?
**A No, I don't remember.**
**(Recess taken from 10:43 a.m. to 10:50 a.m.)**
**(Exhibit Nos. 1041 and 1042 marked for identification.)**
BY MR. MILLS:
Q I am handing you what has been marked as Exhibit 1041.
MR. FELDSTEIN: Object to Exhibit 1041, relevance and authenticity, and reserve other objections.
BY MR. MILLS:
Q So Exhibit 1041, in the middle of the page, we see the -- at the time it was a Twitter handle @billdamsky.
You see that?
**A Yes.**
Q And that is you?
**A Yes.**
Q On March 22nd, 2021, you wrote, Congrats. Jillian, exclamation point. Correct?
**A It appears to show that. I don't remember specifically that, but yes.**
Q That was a reply to a tweet from Dr. Jill

Richmond, Ph.D., with the handle @tcelltracker. Correct?

**A Yes.**

Q And so that is one of the inventors of the '505 patent. Correct?

**A Yes.**

Q So your congrats was in regard to her achieving officially a tenure track assistant professor at UMass Medical. Correct?

**A Yes, but I would say that every time I go on Twitter I am probably congratulating someone for something. It is a very common thing for me to do.**

Q So my question was not about your customs. My question was specifically about the response, your tweet right here. Your tweet right here on March 22nd, 2021 is congratulating Jill Richmond, the inventor of the '505 patent, on achieving tenure track at the University of Massachusetts. Correct?

MR. FELDSTEIN: Objection. Asked and answered.

THE WITNESS: I am just providing context.

BY MR. MILLS:

Q So you still haven't answered the

question. So I just need you to answer the question. I just want to make sure there is no question about authenticity. Your counsel keeps objecting to authenticity.

So we just need to establish that you are not saying this is fabricated. You don't have to defend that. I just need to know this is what you said when you said it.

So on March 22nd, 2021, when you congratulated Jill Richmond, the inventor of the '505 patent, you were congratulating her on receiving tenure at the University of Massachusetts. Is that correct?

MR. FELDSTEIN: Objection.

THE WITNESS: Tenure track. Not achieving tenure.

BY MR. MILLS:

Q So with that correction, on March 22nd, 2021 in this tweet, you are congratulating Dr. Jill Richmond, the inventor of the '505 patent, on achieving -- becoming a tenure track of assistant professor at the University of Massachusetts?

**A That appears to be the case, but I want to contextualize that every time I go on Twitter or X, it is very common for me to congratulate someone on**

**an achievement.**

Q So in the deposition, it is important that you respond to my questions. It may be that you wish that there was a different question or you may wish I was asking for context, but it is important that when I ask a question that you focus on just my question and that you not start talking about different things.

MR. FELDSTEIN: Dr. Damsky, you can answer the questions however you believe is the appropriate answer to the question. Counsel's instructions to you are inappropriate.

THE WITNESS: It seems relevant to me to provide context to the answer.

MR. MILLS: So first of all, your objections are improper.

MR. FELDSTEIN: It wasn't an objection. It was an instruction to the witness that what you are telling him is improper.

MR. MILLS: If you want to instruct the witness not to answer a question, you can instruct him to not answer a question. If you give an improper instruction, then

we will go to the Board on that. Please do not make speaking objections or offer instructions as to how the witness should answer a question. He needs to give responsive, truthful answers to the questions I pose. That is what he needs to do.

MR. FELDSTEIN: If you are misdirecting him on what he is required to do, I will clarify for the record. If you want the dialogue going between the two of us, that is fine. I will continue -- if you misrepresent what his responsibilities are, I'll continue to clarify for the witness.

MR. MILLS: So I haven't misrepresented his responsibilities. If Dr. Damsky continues to insist on talking about things other than what I'm asking about when I ask a question, we will be here all day and we might have to hold him over until tomorrow. Okay.

MR. FELDSTEIN: We are not going to hold anyone over until tomorrow, obviously. And if you give improper

instructions to the witness, I will clarify. If you do it again, I will do it again.

MR. MILLS: So if the witness continues to dissemble instead of answering the questions that I pose --

MR. FELDSTEIN: Okay. I disagree that the witness is dissembling. That is offensive and inaccurate, but go ahead.

BY MR. MILLS:

Q Dr. Damsky, you need to focus on the questions I ask.

Dr. Damsky, you are not disputing that on March 22nd, 2021 you congratulated Dr. Jill Richmond on achieving tenure track assistant professorship at the University of Massachusetts. Correct?

**A That appears to be the case, yes.**

Q Underneath Dr. Richmond's announcement, she writes, Thanks, @HarrisVitiligo, for this opportunity to do some great, pound, science.

Do you see that?

**A Yes.**

Q Do you have an understanding as to whose Twitter handle is @HarrisVitiligo?

**A It is probably John Harris.**

Q And then at the bottom of the page, there is a reply from Dr. Richmond to your congratulations.

Do you see that?

**A Uh-huh, yes.**

Q It says, Thank you, Dr. Damsky, exclamation point, purple heart.

Do you see that?

**A Yes.**

Q Thank you. You can set that aside.

Handing you what has been marked as Exhibit 1042.

MR. FELDSTEIN: Object to Exhibit 1042 on at least to relevance and authenticity. Reserve other objections.

BY MR. MILLS:

Q So the title of Exhibit 1042 is Dramatic Response in Cutaneous Sarcoidosis with JAK Inhibitor. Correct?

**A Yes.**

Q This is a November 27, 2021 article by Charles Bankhead in MedPage Today.

Do you see that?

MR. FELDSTEIN: Objection.

THE WITNESS: Yes, this looks like a press release.

BY MR. MILLS:

Q This press release has some quotes that are attributed to you. Is that correct?

**A I would have to review it. I am happy to do so.**

Q It is three pages. Go ahead and take all the time you need to review it.

**A Okay.**

Q So the press release in 1042 has some quotes that are attributed to you?

**A Yes.**

Q On page 3, there is a list of disclosures. Do you see that?

**A Yes.**

Q So here, you disclose relationships with Pfizer, Advance Cell Diagnostic/Bio-Techne.

**A Uh-huh.**

Q -- AbbVie, Eli Lilly, TWI, Biotechnology, Incyte, and EMD/Millipore/Sigma. Do you see that?

**A Yes.**

Q On this date, in -- November 7th, 2020, wouldn't you agree that you had relationships with

each of those companies?

MR. FELDSTEIN: Objection.

BY MR. MILLS:

Q Let me reask the question. On this date in -- on November 7th, 2021, you had relationships with each of these entities?

**A Based on the document and the best of my recollection, yeah.**

Q On November 7th, 2021, what was your relationship with Incyte?

**A I don't remember on that exact date.**

Q What is Incyte? Maybe we should spell it first. Can you spell it?

**A Excuse me. I-N-C-Y-T-E. It's in the document.**

Q So what is Incyte?

**A A company.**

Q Can you tell us any more about Incyte, the company?

**A They are a pharmaceutical company.**

Q Are you aware that Incyte is the owner of Villaris?

**A Recognizing I don't fully understand the details of ownership and so forth, I understand that there is a relationship between Incyte and**

**Villaris.**

Q Do you know when that relationship began?

**A I would have to look it up.**

Q When did your relationship with Incyte begin?

**A I don't remember.**

Q Would you agree that your relationship with Incyte began sometime before November 7, 2021?

**A Yeah, I mean this document suggests that, yeah.**

Q And what was the first task, at a general level? I don't want you to reveal anything confidential, but what was the first task at a general level you were asked to do as part of your relationship with Incyte?

**A I don't remember a specific task that I was asked to do by Incyte.**

Q Ever?

**A A lot of my work involves running clinical trials, and it is not uncommon to partner with companies or collaborate with companies around that. I imagine it was something in that arena, but I don't remember the exact circumstances.**

Q You believe in November 2021 that you were engaged in a clinical trial for Incyte?

MR. FELDSTEIN: Objection.
THE WITNESS: Can I look at the CV?
Is that where you were looking?
BY MR. MILLS:
Q I am handing you what has been premarked as Exhibit 2006.
**A Looking at page 3.**
Q What are you looking at on page 3?
**A I have multiple clinical trials listed. In answering your question, one trial is labeled as being supported by the agency Incyte. That is what I am referring to.**
Q So in your CV, Exhibit 1006 [sic], you list five current clinical trials. Correct?
**A Yes.**
Q One of those is a clinical trial for Incyte?
**A I wouldn't say it was for Incyte.**
Q What would you say?
**A It is not uncommon for us to propose clinical trials to companies to seek some support called investigative initiated trial.**
Q So out of five clinical trials that you are currently engaged in, one of those five is funded by Incyte. Is that correct?

**A So this study has still not been initiated. I am not sure what else more I can disclose beyond that.**

Q I am asking about on page 3 of your CV, Exhibit 1006 [sic], you say current clinical trials?

**A Yes.**

Q And you list five of those?

**A Yes.**

Q One of the five that you list, it says that it is Incyte and it says the amount is $200,000?

**A Yes.**

Q Were you paying Incyte $200,000 to perform a clinical trial for you?

**A No.**

Q They were funding $200,000 to you for this clinical trial. Is that correct?

**A My recollection is that those were the agreed upon terms, yeah.**

Q The project period is October 2023 through December 2024. Correct?

**A Yes.**

Q So is it your belief that this clinical trial with a project period beginning in October

2023 is what you were referring to on November 7th, 2021 when you disclose a relationship with Incyte?

**A I imagine it would have been related to that project, yes.**

Q When you say related to that project, are you saying you spent the last two years working with Incyte to try to get this clinical trial going?

MR. FELDSTEIN: Objection.

THE WITNESS: Things are happening surprisingly slow, yes, it would be possible.

BY MR. MILLS:

Q So you had at least a two-year relationship with Incyte that culminated in funding from them to you for the clinical trial in the amount of $200,000. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I want to make sure I am entirely accurate and don't say anything inaccurate.

That was listed there with the anticipation that that would be the timeline that was studied. I have not received that money yet from Incyte. The

study has not moved forward at this point.
BY MR. MILLS:
Q Okay. You spent two years preparing for the study which they approved or in which you had an agreement they would pay you $200,000 to complete it, and your work hasn't begun yet?
MR. FELDSTEIN: Objection.
THE WITNESS: There was an approval. I don't want to disclose anything I shouldn't about the study design and whatnot.
But it is not clear that the project is definitely moving forward, is what I would say.
BY MR. MILLS:
Q I am definitely not asking you for any confidential information about the study design. I just want to make sure that I understand.
For the past two years you have been working together with Incyte developing this clinical trial with the agreement that they would be paying $200,000 to fund it?
MR. FELDSTEIN: Objection.
THE WITNESS: I would say I wrote a clinical trial. I submitted it to them.

I commonly do that to other companies as well. I don't know how much time they spent reviewing it. I would say that my interactions with them were very minimal.

BY MR. MILLS:

Q This clinical trial on page 3 of your CV, is that your only relationship that you have had with Incyte?

**A Could you be more specific about what relationship entails.**

Q Tell me everything. I want to know everything.

MR. FELDSTEIN: Objection.

BY MR. MILLS:

Q I don't need to know confidential details, but, you know, I need to know everything about your relationship with Incyte.

MR. FELDSTEIN: Objection.

THE WITNESS: I just don't want to say anything inaccurate. It is not uncommon for pharmaceutical companies to engage with doctors. They all do it. I mean, it is possible I engaged with Incyte in other discussions. I just don't remember. I mean, people come by the

office. I am often busy. I guess it just depends on what relationship exactly means.

BY MR. MILLS:

Q I want to know everything about the relationship with Incyte.

MR. FELDSTEIN: Objection.

BY MR. MILLS:

Q And again, you don't need to defend yourself. I just need the facts.

MR. FELDSTEIN: Objection.

THE COURT: Again, I don't exactly remember anything specific beyond this, but just to be completely accurate, it is possible that someone from Incyte may have come into my office to drop off a sample. That is common. A lot of companies do it. Maybe I saw someone from Incyte in a dermatology meeting. So I just want to make sure I am responding to you accurately when you say relationship. But did they support another clinical trial, no.

BY MR. MILLS:

Q So setting aside happenstance interactions

and somebody dropping off a sample or meeting somebody at a cocktail party, do you have any other substantial entanglements with Incyte other than the clinical trial that you have been working on for the past two years?

MR. FELDSTEIN: Object to form. Misstates the record.

THE WITNESS: No, they didn't support any other clinical trials. Is that what you are asking?

BY MR. MILLS:

Q I am asking about any substantial relationship of any kind.

MR. FELDSTEIN: Object to form.

THE WITNESS: There was a prior case I was involved in that I believe involved Incyte to some extent.

BY MR. MILLS:

Q When you say you were involved in it, what do you mean?

**A In a similar context to this.**

Q Okay. So before the clinical trial that you worked on over the last two years with Incyte, you were an expert witness in a case involving Incyte?

MR. FELDSTEIN: Object to form. Misstates the testimony.

THE WITNESS: I wouldn't characterize my collaboration as -- or my relationship as a collaborative one with Incyte. But to answer your question, yes, I was involved in a case that I believe Incyte was also involved in.

MR. FELDSTEIN: I am going to note for the record to come back to it. I am not sure that the transcription of the witness's answer was correct. I think the witness said I would not and the real time said I would.

BY MR. MILLS:

Q Doctor, you seem reluctant to talk about this other engagement with Incyte. But you were, in fact, retained by Finnegan Henderson, the same law firm that has retained you here.

You were retained previously by that same law firm to be an expert for Incyte. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I believe Incyte was involved with the prior case. And, yes, I have worked with this law firm on that one

case previously.
BY MR. MILLS:
Q You didn't swear under oath in that case, I have been retained by Finnegan, Henderson, Farabow, Garrett and Dunner, LLP, for petitioner, Incyte Corporation?
**A Can I see where you are reading from.**
Q Let's start with your memory. Do you remember saying that under oath?
**A I don't remember the exact phrase, no, what I said, no.**
Q You seem to be reluctant right now to admit that you were retained as an expert for Incyte company?
MR. FELDSTEIN: Object to form. Why don't you show him the document? He has asked to see the document, Counsel. Why are you playing games with him?
MR. MILLS: There's no speaking objections, please.
MR. FELDSTEIN: It is not an objection. It is a question. Why are you playing games with him? We're going to be here all day if you play games all day.
BY MR. MILLS:

Q So the deposition is not for you to ask questions. My question is about your memory, your recollection.

**A I just want don't want to say anything inaccurate. It was a few years ago. It is not that I am reluctant to talk about it. I just don't -- I don't remember all the details from just my memory alone.**

Q Just about your recollection. Is it your recollection that in that prior case, that you were hired on behalf of a different entity than Incyte?

MR. FELDSTEIN: Object to form.

THE WITNESS: Sorry. Can you just repeat it.

BY MR. MILLS:

Q I am just trying to understand your confusion about Incyte. Because I asked you first if you had any other substantial relationship with Incyte other than the clinical trial. And first, you started talking about random encounters at cocktail parties and things like that.

**A Uh-huh.**

Q And then eventually you mentioned that Incyte was involved in somehow a prior case. So I am just trying to find out do you know that Incyte

was the party that -- on whose behalf you were hired in that case.

MR. FELDSTEIN: Object to form.

THE WITNESS: It is okay just to look at what you are reading from?

BY MR. MILLS:

Q Well, right now, I am asking about your memory.

**A Yeah, I mean, my recollection was that Incyte was involved in that case, yeah.**

Q Okay. And you are saying it was involved in that case. But you understand that you were hired by Incyte's law firm to testify in that case. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: I don't remember who -- who paid me.

BY MR. MILLS:

Q Okay. So in your declaration, you don't mention anywhere that you had previously been hired by this same law firm to provide testimony on behalf of the Incyte Corporation that acquired Villaris?

MR. FELDSTEIN: Objection.

BY MR. MILLS:

Q Correct?

**A I'm sorry. I am not sure I understand what the actual question was.**

Q So you don't mention your prior expert witness work for Incyte in your declaration in this case. Correct?

**A I'd have to review it, but I don't think so.**

Q Go ahead and take a look on page 52 of your declaration. Footnote 3.

**A Okay.**

Q So would you agree that when you signed your declaration, you were aware that Villaris had been acquired -- you were aware that -- I am going to start over and try and rephrase the question the way you have written it here.

You agree that when you signed your declaration in this case, you were aware that Auremolimab, an anti-CD122 antibody developed by Villaris and acquired by Incyte, as a treatment of vitiligo?

**A Yes, that's what it says, yes.**

Q So you were aware that there was a relationship between Villaris and Incyte when you signed your declaration. Correct?

**A Yes.**

Q And in your declaration, you don't mention Incyte anywhere else?

**A Oh, gosh, I don't remember.**

Q You can take the time that you want to look, but would it surprise you if when I do a word search, Incyte doesn't show up anywhere other than in that footnote?

MR. FELDSTEIN: Objection.

THE WITNESS: I just don't remember.

BY MR. MILLS:

Q Okay. So -- but as you sit here today, you can't point to anywhere in your declaration where you disclosed that you had a relationship with Incyte that had existed for several years before you submitted your declaration?

MR. FELDSTEIN: Objection.

THE WITNESS: Well, it is in my CV.

BY MR. MILLS:

Q The clinical trial?

**A Uh-huh.**

Q So in your -- the only place that you can point to as disclosing a relationship with Incyte is disclosing a clinical trial with a start date of October 2023. Is that correct?

**A I don't remember the date off the top of my head, but, yeah, I can flip back there. Correct.**

Q You can't point to anyplace in your declaration where you disclose that you were previously hired as an expert for Incyte --

MR. FELDSTEIN: Objection.

BY MR. MILLS:

Q -- for a patent case?

MR. FELDSTEIN: Misstates the testimony -- record.

THE WITNESS: Not off the top of my head, no, I can't remember.

(Exhibit No. 1043 marked for identification.)

MR. FELDSTEIN: Object to Exhibit 1043 on at least relevance and authenticity. Reserve other objections.

BY MR. MILLS:

Q Dr. Damsky, do you recognize Exhibit 1043?

**A Yes.**

Q These are slides from a presentation you gave on March 24, 2022 at the Medical Dermatology Society annual meeting?

MR. FELDSTEIN: Objection.

THE WITNESS: That appears to be the case, yes.

BY MR. MILLS:

Q Please take a look at the second page of the exhibit.

**A Okay.**

Q Here, you disclose research support from, among other places, Incyte. Correct?

**A Yes.**

Q And you also disclose consulting fees from, among other places, Incyte. Correct?

**A Yes.**

Q In this presentation, you are discussing off-label use of JAK inhibitors. Correct?

**A Yes.**

Q Please take a look -- and I apologize, there are no page numbers on there. Page 8.

Does that begin with the words "some cytokines"?

**A Yes.**

Q It says, Some cytokines signal via the JAK-STAT pathway while others do not.

Do you see that?

**A Yes.**

Q We talked about JAK earlier. Is that

correct?

**A Yes.**

Q Okay. And this is referring to the same JAK?

**A Yes.**

Q What is the STAT in the JAK-STAT pathway?

**A STAT stands for signal transducer and activator of transcription. And those are proteins that act downstream of the JAK proteins in the pathway.**

Q Okay. So is there a particular STAT that is downstream of JAK1?

**A No.**

Q Is there a particular STAT that is downstream of JAK3?

**A Some are more common than others, but -- I guess with JAK1 and JAK3, but they're -- I guess the only way to go, only way it can signal --**

THE COURT REPORTER: I'm sorry? I guess what?

THE WITNESS: It -- some JAK proteins are more common -- or some STAT proteins are more common with some JAK proteins, but they are usually not exclusive.

BY MR. MILLS:

Q What are the most common STAT proteins for JAK1?

**A STAT1 is common.**

Q Any others that are common?

**A That one is the most common.**

Q What are the most common STATs for JAK3?

**A STAT5 is common.**

Q Are there any others that are common?

**A I would have to review the literature, but I think that is the most common one.**

Q On this Slide 8 in Exhibit 1043, you give a list of cytokines that you may know that do signal via JAK-STAT.

Do you see that?

**A Yes.**

Q On that you list, IL-2. Correct?

**A Yes.**

Q You also list IFN gamma. Correct?

**A Yes.**

Q And IFN stands for interferon?

**A That is correct.**

Q You also list IL-15. Correct?

**A Yes.**

Q Each of IL-2, IL-15 and interferon gamma are TH1 Type 1 cytokines that signal via JAK-STAT.

Correct?

**A This depicts a very bird's-eye view of this issue without a lot of the nuance that is known to exist, but that is what it says, yes.**

Q Do you disagree with what you wrote here on Slide 8 on Exhibit 1043?

**A I don't disagree with it. I would just say it is more complicated than that. This is part of an educational talk that often starts simple.**

Q So cytokine activation of JAK-STAT pathways may be more complicated than what is depicted on Slide 8, but you do agree that IL-2 interferon gamma and IL-15 are cytokines that signal via JAK-STAT. Correct?

**A The pathways are well-known. I just want to reiterate that I think it's more the grouping them altogether here that is perhaps a bit simplistic.**

Q So I have a question about upstream versus downstream in the pathway. What does it mean for a cytokine to be upstream? Just in simple English terms, what does it mean that that is upstream?

**A I am guessing that you mean that it is binding to a receptor, but I am not exactly sure what you are asking.**

Q Is upstream signaling a term that you use in the field?

**A I usually say one molecule is upstream of another, yeah.**

Q Okay. So when you say that, what does that mean?

**A One molecule is acting on another one and turning it on or turning it off or modulating it in some other way.**

Q Okay. So you agree that IL-15 is a molecule that is upstream of the JAK-STAT pathway. Correct?

**A Yes, but recognizing I believe it can activate other pathways as well.**

Q But you do agree that IL-15 is a molecule that is upstream of the JAK-STAT pathway?

**A It can activate JAK-STAT pathway, yes.**

Q As we discussed before, it specifically is upstream of the JAK1 and JAK3 pathways. Correct?

**A Generally speaking, yes.**

Q Just at a general level, what is IL-4?

**A IL-4 is a cytokine.**

Q It is an immunostimulatory cytokine?

**A Generally, yes.**

Q And at -- in a general level, what is the

difference between what you have described here as Type 1 versus a Type 2 cytokine?

**A It is a way that immunologists just tend to group cytokines at a very basic level.**

Q What is the significance of the grouping?

MR. FELDSTEIN: Objection.

THE WITNESS: It helps people to understand the pathway and the effect at a broad level.

BY MR. MILLS:

Q So if you were to give one or two sentences to explain at a high level the difference between the Type 1 and the Type 2, how would you do that?

**A Type 1 immunity tends to protect against viruses. Type 2 immunity tends to protect against other parasitic organisms, worms.**

Q IL-4 as a receptor that can be expressed on some membranes. Correct?

**A Yes.**

Q In fact, it operates on at least one receptor complex. Is that correct?

**A Yes.**

Q In at least one native, naturally existing receptor complex for IL-4, there is an IL-4

specific component as well as the same gamma receptor chain that we find in the IL-15 and IL-2 receptors. Correct?

**A Correct.**

Q That same gamma receptor also appears in the receptors for IL-7, IL-9, and IL-21. Is that correct?

**A Yes.**

Q Does IL-4 have more than one type of receptor complex?

**A I would have to check.**

Q You agree that if one were to inhibit the gamma receptor in the body, that that would -- let me back up and ask a different question.

When IL-4 binds to its receptor, what JAK does that initiate?

**A I would have to double-check.**

Q So we talked earlier that the gamma receptor initiates JAK3.

Do you recall that?

**A It can activate it, yes.**

Q So for IL-4, do you know whether or not the gamma receptor subunit that IL-4 activates also activates JAK3?

**A That would probably be the prediction,**

**yes.**

Q So if I were to inhibit the gamma subunit, if I were to prevent things from binding to it, that would inhibit JAK3 signaling induced by IL-4. Correct?

MR. FELDSTEIN: Objection.

THE WITNESS: Yes.

BY MR. MILLS:

Q I am going to ask you about a different interleukin, IL-17. You list that as one that does not signal via JAK-STAT.

Do you see that?

**A Yes.**

Q What is IL-17?

**A A different cytokine.**

Q And at a general level, what does IL-17 do?

**A Activates the immune system.**

Q Are you aware that IL-15 signaling can increase the expression of IL-17?

**A I would have to review the evidence.**

Q Okay. So sitting here right now, you don't know one way or the other whether IL-15 induces IL-17 signaling?

MR. FELDSTEIN: Object to form.

Misstates the testimony.

THE WITNESS: Yeah, in order to comment more specifically, I would really have to review the underlying data that supported that conclusion.

BY MR. MILLS:

Q Okay. Without reviewing documents, that is not something you have an opinion on. Is that correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I wouldn't be surprised. I just don't know the details.

BY MR. MILLS:

Q Let's take a look at Slide 10 of Exhibit 1043. This is a slide on SCID. Correct?

**A Yes.**

Q What is SCID?

**A Severe combined immunodeficiency.**

Q In layman's terms, what is severe combined immunodeficiency?

**A Patients are born without an immune system that protects them from infections.**

Q That is an adverse condition to have?

**A Yes.**

Q It is not something that is pleasant.

Correct?

**A I can't imagine so, no.**

Q On this page, you have a depiction of some cytokines involved with SCID.

Do you see that?

**A Yes.**

Q For IL-2 you have a big X next to the gamma receptor -- do you see that -- or in front of the gamma receptor?

**A Yes.**

Q What is the significance of that big red X that is crossing out the gamma receptor for IL-2?

**A That it is absent in patients with this disorder.**

Q Okay. So patients with severe combined immunodeficiency don't have any gamma receptors in the IL-2 receptor complexes. Correct?

**A At least that have any significant function, no.**

Q Okay. You can set that document aside.

(Exhibit No. 1044 marked for identification.)

MR. FELDSTEIN: Object to Exhibit 1044, relevance and authenticity. Reserve other objections.

BY MR. MILLS:

Q Okay. Dr. Damsky, do you see on the bottom of the first page of Exhibit 1044 your Twitter handle @billdamsky?

**A Yes.**

Q And there on March 16th, 2023, you are sending a tweet in response to @HarrisVitiligo.

Do you see that?

**A Yes.**

Q And you have a hashtag, it says on deck.

Do you see that?

**A Yes.**

Q What is the significance of the hashtag on deck in this context here?

**A I believe we were both speaking or going to speak in the same session of a dermatology meeting.**

Q So on deck means you are waiting to go and speak. Is that right?

**A Uh-huh.**

Q So on March 16th, 2023, John Harris, one of the inventors of the '505 patent, says that he is next up to talk about JAK inhibitors in vitiligo and other diseases with Brett King and Bill Damsky.

Do you see that?

**A Uh-huh. Yes.**

Q So the three of you are making a joint presentation in March of 2023. Is that correct?

**A No, it wasn't a joint presentation. We were invited to speak at the same symposium.**

Q So John Harris is speaking first and then after that Brett King is speaking, and then Bill Damsky is speaking?

**A I don't remember the order that we spoke, but, yeah, one before the other, yeah, but not together.**

Q Okay. And then John Harris says -- he sends a picture of you. It is kind of funny. Right? He sends a picture of you, and he says that you are liking his tweet while across the room while waiting to take the stage. Right?

**A Yes.**

Q And then you laugh at the fact that you guys are in the same room and you are, you know, communicating through social media rather than talking to each other. Right?

**A Yes.**

Q Okay. You can set that aside. Oh, I guess let me ask you first. Do you have any doubts or are you contesting the authenticity of the --

the tweets in this exhibit?

MR. FELDSTEIN: Objection.

THE WITNESS: I would just say the context is that there are a lot of people at this meeting and I probably had similar interactions with a lot of other people.

BY MR. MILLS:

Q So I asked you about whether you have any doubts as to the authenticity, and you didn't answer that question. You just talked about the context. So we just need a clear record.

My question is about whether you have any doubts as to the authenticity or about this exchange?

MR. FELDSTEIN: Object to form. Calls for a legal conclusion, asked and answered.

THE WITNESS: No, but I do think the context is important.

BY MR. MILLS:

Q Okay. So you agree there is no doubt as to the fact that you had these communications with Dr. Damsky [sic] on the day shown?

MR. FELDSTEIN: Objection.

THE WITNESS: Dr. Harris.

BY MR. MILLS:

Q Yes. Thank you. Let me ask the question again. Thank you.

You agree there is no doubt as to the fact that you had these communications with Dr. Harris on the date shown on the exhibit?

**A I mean, I can't say that I actually remembered this, but that is what it appears to show.**

Q Okay. You can set that document aside.

(Exhibit No. 1045 marked for identification.)

MR. FELDSTEIN: I am going to object to Exhibit 1045 for at least relevance, authenticity, and very, very small print. Reserve on other grounds.

BY MR. MILLS:

Q So I have handed you, Dr. Damsky, Exhibit 1045. This exhibit states that it was published online March 22nd, 2023.

Do you see that?

**A Yes.**

Q It is a little hard to make out.

What is the organization that has published this article, up at the top?

**A Touch Immunology.**

Q Are you familiar with Touch Immunology?

**A I have done at least this for them, but I can't say I am very familiar with what they do beyond that --**

Q Okay.

**A -- putting these things together, yeah.**

Q Do you have any doubts as to the authenticity of this publication from Touch Immunology?

MR. FELDSTEIN: Objection.

THE WITNESS: No.

BY MR. MILLS:

Q Around the middle of the page, there is a heading that says Disclosures.

Do you see that?

**A Yes.**

Q So here in March of 2023, you disclose a consulting relationship with Incyte as well as receiving grant/research support from Incyte, among other companies. Correct?

**A Yes.**

Q Thank you. You can set the document aside.

Dr. Damsky, you have a Bachelor's degree

in biology, which you received in 2005. Correct?

**A Yes.**

Q As part of your undergraduate education, did you take any courses in immunology?

**A I don't remember. Certainly, there was immunology as components of the classes I took. I can't remember if there was a class specific on immunology.**

Q Did you take cell biology?

**A As an undergraduate?**

Q Yes.

**A I don't remember. Again, I took biology classes. I'm not sure if cell biology was -- was a separate class or was part of the biology class.**

Q Did you take a separate course on molecular biology?

**A A --**

Q As an undergraduate?

**A Yeah, yeah, I don't remember.**

Q What about a separate course as an undergraduate in microbiology?

**A I don't remember.**

Q What is the difference between cell biology and microbiology?

**A Cell biology relates more to cells.**

**Molecular [sic] biology is more towards molecules within cells and otherwise.**

Q I think I asked about cell biology versus microbiology. You answered about cell biology versus molecular biology, which is okay.

What about the difference between cell biology and microbiology?

**A People use it in different ways, but, to me, microbiology is the study of microbes, so nonhuman things, like bacteria and viruses.**

THE COURT REPORTER: Nonhuman?

THE WITNESS: Organisms, like bacteria and viruses.

BY MR. MILLS:

Q And then from 2007 through 2011, you were working on your Ph.D. at the University of Vermont. Correct?

**A Yes. I was a student at the University of Vermont, but the lab I was working in moved so I wasn't physically there the whole time.**

Q Where did it move?

**A To Yale.**

Q So you followed your research adviser from Vermont to Yale?

**A Yes.**

Q And that was Marcus Bosenberg?
**A Yes.**
Q Okay. When did you move from Vermont to Yale?
**A I don't remember the exact date. It was probably in 2007, 2008.**
Q During your education to receive your Ph.D., did you take coursework in immunology?
**A I believe immunology was integrated into other classes.**
Q As you sit here right now, you don't recall a separate class on immunology that you took as part of your Ph.D. education. Is that correct?
**A I don't think so. I certainly was exposed to a lot of immunology.**
Q Do you characterize immunology as the focus of your Ph.D. work that you did prior to 2011?
**A It evolved to be more immunologically related at the end, but, no, it was not the main focus.**
Q Were you studying cancer research?
**A Yes.**
Q Okay. And then you were working on your M.D. after that, which you completed in 2013. Is

that correct?

**A Yeah, it was before and after, but, yes, including after.**

Q After you received your M.D., then you spent a year as an intern. Is that correct?

**A Yes.**

Q And it's common practice for physicians to spend a year as an intern after medical school. Is that correct?

**A Yes.**

Q After that, you spent three years as a resident. Is that correct?

**A I did a research track residency program, so depending how you define it, it was either three or four years, yes.**

Q So -- and it is also common as part of a physician's training after medical school first to complete an internship and then they complete a residency training in a specialization. Is that correct?

**A Yes, that is common.**

Q You completed your residency in the year 2017. Correct?

**A Yes.**

Q What month did you complete your

residency?

**A June 30th.**

Q And after you completed your residency, you began pursuing an academic track career. Is that correct?

**A Yeah, I wouldn't say I began pursuing it at that point, but I continued pursuing it.**

Q In your CV, Exhibit 1006 [sic], you list some honors and recognitions.

Do you see that?

**A I don't have it in front of me. Sorry. Yes, I do. Yes, I see it.**

Q Beginning on page 2, you have the dates for -- you have 10 entries under International, national, and regional professional honors and recognitions.

Do you see that?

**A Yes.**

Q You discuss these in your declaration. Correct?

**A I believe I did, yes.**

Q What paragraph is that in? Do you see it in paragraph 7?

**A Yes, I just found it. I see it.**

Q In paragraph 7, you give the names of the

awards, but not the years of the awards.

Do you see that?

**A Yes.**

Q Looking at Exhibit 1006 [sic], on page 2, nine out of 10 awards that you list there were granted to you in the year 2017 or after. Is that correct?

**A Yes.**

Q So those were awards you received after you completed your residency in 2017. Is that correct?

**A Yes.**

Q And looking on the prior page where you have career academic appointments.

**A Uh-huh.**

Q So you have eight appointments listed on that page.

Do you see that?

**A Yes.**

Q All of those appointments begin no earlier than 2017. Is that correct?

**A Yes.**

Q So those are all appointments that you received after you completed your residency. Is that correct?

**A Yes.**

Q Looking at page 2 at the top. You list board certifications. The first of those is the certification in dermatology from the American Board of Dermatology in 2017. Is that correct?

**A Yes.**

Q Did you receive that certification after you completed your residency?

**A Yes.**

Q What month in 2017 did you receive board certification in dermatology?

**A I don't remember.**

Q Going back. You completed your residency in June. Is it something that happened in the fall?

**A Yeah, I would assume. I don't know the exact date. I assume so.**

Q So for board certifications, you don't have any -- or you did not have any board certifications before that dermatology certification in 2017. Is that correct?

**A No. Yes, it is correct.**

Q Okay. Thank you. That is my fault. Sometimes it is an ambiguity sometimes we get when we ask questions.

Dr. Damsky, have you ever heard of the National Academy of Medicine?

**A I think so.**

Q What is the National Academy of Medicine?

**A I don't exactly know. I think it is an honor of some sort.**

Q Are you familiar with the American Society of Investigative Pathology?

**A No, I don't think so.**

Q Are you aware of the American Academy of Arts and Sciences?

**A Yeah, I think so.**

Q What does it mean to be a member or a fellow of the American Academy of Arts and Sciences?

**A Some sort of recognition. I don't know the exact criteria.**

Q Are you familiar with the Journal of Immunology?

**A Yes.**

Q Is that a well-respected journal?

**A Yes.**

Q Are you familiar with the American Journal of Pathology?

**A Not specifically, no.**

Q Are you familiar with the journal called Immunity?

**A Yes.**

Q Is that a well-respected journal?

**A Yes.**

Q Are you familiar with the journal that is called Cell?

**A Yes.**

Q Is that a well-respected journal?

**A Yes.**

Q Are you aware of the version of the journal Science that is specific to science immunology?

**A Yes.**

Q Is that a well-respected journal?

**A Yes.**

Q Do you know what the NIH is?

**A Yes. I assume you are referring to the National Institute of Health.**

Q Yes. Do you know what the Board of Scientific Counselors is for the NIH?

**A No.**

Q Do you know what NIAID is?

**A Yes.**

Q Do you know what the Board of Scientific

Counselors is for NIAID?

**A No.**

Q Looking again at Exhibit 1006 [sic].

**A That is my CV?**

Q Yes. There is a section on past grants on page -- beginning on page 4.

Do you see that?

**A Yes.**

Q Do you agree that all of your past grants relate to research regarding cancer?

**A Let me review them. No, I don't agree.**

Q So which entries in your past grants do not have to do with cancer?

**A I will work backwards. The last one on page 5, Evaluating the role of janus kinase inhibition in the treatment of sarcoidosis.**

**Another grant, Cytokine RNA in situ hybridization to guide targeted treatment selection in dermatology.**

**Another natural history study of rubella, associated granulomatis lesions in aged individuals.**

**And then of the four cancer grants, all are about the immunology of cancer.**

Q Okay. So your past grants, four of them

related to cancer and three of them do not. Is that correct?

**A Yeah, but the cancer ones are immunology related.**

MR. MILLS: Do you need a break now or keep going?

MR. FELDSTEIN: Food should be here in half an hour. Why don't we keep going.

BY MR. MILLS:

Q Okay. I want to talk about vitiligo.

**A Okay.**

Q Do you remember your first vitiligo patient?

**A No.**

Q Can you think back in your mind to the first vitiligo patient that you recall.

**A I would have been a medical student on dermatology rotation.**

Q And what was the presentation of that patient?

**A Depigmented patches of skin, light patches of skin.**

Q What part of the body?

**A Oh, gosh, I don't remember.**

Q Okay. This was -- sorry. You said this was as a medical student or this was during your residency?

**A Yeah, as a medical student, I do recall seeing patients with vitiligo.**

Q So you were making medical treatment decisions for the individuals during medical school?

**A Sometimes, in a supervised fashion.**

Q Okay. When was the first time that you recall treating a patient with segmental vitiligo?

**A I don't remember.**

Q Do you have a recollection that you have treated a patient with segmented vitiligo but you just don't recall when?

**A I have seen patients with segmented vitiligo. It is not terribly common.**

Q Do you have a recollection as you sit here today as to whether you treated any patients who had segmented vitiligo before the critical date in 2017?

**A I don't remember.**

Q At a high level, what is segmented vitiligo?

**A Segmented vitiligo is vitiligo that**

**appears in a stripe on a localized area of skin.**

Q When was the last time that you treated a patient with industrial vitiligo?

**A I'm sorry, what kind of vitiligo?**

Q Industrial.

**A I am not sure I am familiar with that term.**

Q You don't know what industrial vitiligo is?

MR. FELDSTEIN: Objection. Misstates the testimony.

THE WITNESS: I know that there are forms of chemically induced vitiligo. I am not sure if that is what you are referring to.

BY MR. MILLS:

Q So what is chemically induced vitiligo?

**A Sometimes certain compounds come into contact with the skin and the patient may subsequently develop vitiligo.**

Q And just so we have a working definition. What is the definition that you use for the term vitiligo?

**A Depigmentation of skin.**

Q So in some cases -- and maybe there is an

accident at work, a chemical splashes on someone and it eliminates the pigmentation in an affected area of the skin. Is that correct?

**A I wouldn't say that the mechanism is known to be that simple.**

Q Is the sequence of events at least correct as I described it?

**A Chemical at the beginning, vitiligo at some point down the road, yeah, I would agree with that.**

Q Have you treated somebody who had that type of vitiligo?

**A Yes.**

Q As you sit here today, can you recall that you treated somebody with that type of vitiligo before the critical date in 2017?

**A That, I don't remember.**

Q There are chemicals that physicians sometimes use to treat people with vitiligo by actually removing pigment from their skin to kind of even things out. Is that correct?

**A Yes, there is one in particular.**

Q What is that called?

**A MBEH, monobenzylether of hydroquinone.**

Q So in certain cases when a patient has

vitiligo and they are not happy with the appearance that presents, and under certain circumstances the physician will use MBEH to remove the remaining pigment and create a uniform appearance of color on the patient. Is that correct?

**A It is done very rarely and is a really, really difficult decision, but sometimes it is done.**

Q Have you ever employed that treatment for a patient?

**A I can't remember specifically. I am aware of patients that have had that treatment.**

Q And you can't testify that you have treated a patient with that method of treatment prior to the critical date 2017. Correct?

**A I just don't remember.**

Q When that method of treatment is employed, is it permanent or eventually is there repigmentation?

**A The expectation is that it's permanent.**

Q Are there any treatments that are known today that can reverse that form of vitiligo?

MR. FELDSTEIN: Objection to form.

THE WITNESS: I wouldn't characterize it as a form of vitiligo.

BY MR. MILLS:

Q Are there any compounds or treatments that are known today that can reverse the lack of pigmentation induced by the administration of MBEH?

**A I am not sure, but I don't think of it as a type of vitiligo.**

Q As you sit here today, you can't think of any compounds or treatments that are known today that can reverse the lack of pigmentation in skin that has been treated with MBEH. Correct?

**A I think it is complicated because we don't fully understand the mechanism why MBEH is doing what it does and whether we can call it vitiligo or call it something else. I think it's complicated. But I am not aware of any medication having been evaluated in that setting.**

Q Let's talk about repigmentation more broadly. In your declaration you discuss a reservoir of melanocyte stem cells. So tell us a little bit more of the reservoir of melanocyte stem cells that are used to cause repigmentation in the skin of vitiligo patients?

**A Is there a specific part of the declaration you would like me to turn to?**

Q You mention the term in paragraph 51. You

have a chart where you identify one of the treatment strategies for vitiligo is repigmenting the skin from a natural reservoir of melanocyte stem cells.

**A Paragraph 51.**

Q Yes.

**A I'm sorry. I'm having trouble finding the exact wording you used, where that is.**

Q Paragraph 51, there is a chart.

**A Yeah, the chart.**

Q Continues onto the next page. Under Treatment Differences, you have a treatment strategy, and you say, quote -- for vitiligo, quote, repigment skin from a natural reservoir of melanocyte stem cells.

Do you see that?

**A Yes.**

Q Okay. So this natural reservoir of melanocyte stem cells, can you tell us a little bit about that?

**A It is thought to exist in a specific part of the hair follicle called the bulge, and they're stem cells.**

Q The hair follicle also has a -- in addition to the bulge, it also has a bulb?

**A Correct.**

Q The bulb is the part at the very bottom?

**A Correct.**

Q And then midway up is the bulge?

**A Correct.**

Q And these melanocyte stem cells populate in the bulge area of the hair follicle. Is that correct?

**A Yeah, that is where they are thought to reside, yes.**

Q So one of the therapies for vitiligo is administering light treatments, is that correct, phototherapy?

**A Yes.**

Q In phototherapy, one administers either UVA or UVB radiation of the skin. Is that correct?

**A It is mostly UVB nowadays, but UVA has also been used.**

Q And the purpose of administering that phototherapy is to induce and activate those melanocyte stem cells in the bulge of the hair follicles to reproduce and repopulate the melanocytes in the skin surrounding that hair follicle. Is that correct?

**A Yeah, the model is that they come out of**

**the bulge and repopulate the epidermis.**

Q So the mature melanocytes, they are generally located at the -- at what portion of the skin?

**A The intrafollicular epidermis or the epidermis in between hair follicles.**

Q So the reservoir of melanocyte stem cells is in the bulge of the hair follicle. And when they are proliferating and migrating, they come out and they move into the epidermis of the skin. Is that correct?

**A Yeah, generally speaking.**

Q Is that also normally like our normal pigment on our skin, that is also where that pigment is generated. Is that correct?

**A I don't think it is fully understood outside of vitiligo.**

Q So you are leaving room for the possibility that maybe you have melanocyte stem cells in the epidermis normally, but once vitiligo takes hold you have lost the stem cells in the epidermis and so repigmentation of vitiligo occurs by drawing on the stem cells from the bulge of the hair follicle. Is that correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I don't know that anyone has excluded the possibility formally that there are some melanocyte stem cells that maintain an epidermis, but the general working model is they come from the bulge and go into the epidermis.

BY MR. MILLS:

Q All right. So are there any treatments of which you are aware today in which repigmentation of vitiligo skin occurs without making use of the melanocyte stem cells from the reservoir in the bulge of the hair follicle?

**A I would have to review the literature to answer inclusively.**

Q To date, there is a JAK inhibitor approved for treatment of vitiligo. Is that correct?

**A Yes.**

Q Is there one or more than one?

**A Presently, there is one.**

Q Which one is that?

**A Ruxolitinib cream.**

Q And you have given presentations before about the use of JAK inhibitors, including ruxolitinib, for the treatment of vitiligo?

**A It may have been included in a**

**presentation that I gave. Is there a specific example or -- I give a lot of presentations on JAK inhibitors. I don't remember what is in every last one of them.**

Q But that is something you have presented on. Is that right?

MR. FELDSTEIN: Object to form.

THE WITNESS: I would have to look.

BY MR. MILLS:

Q I am just trying to find out -- this is a subject you are knowledgeable about?

**A Yes.**

Q So when -- and have you administered ruxolitinib to a vitiligo patient?

**A Yes. Cream.**

Q Have you administered vitiligo to -- sorry.

Have you administered ruxolitinib to a vitiligo patient and seen repigmentation in that patient?

**A I have, but the results are often disappointing.**

Q When you and other physicians today administer ruxolitinib to a vitiligo patient, is it the current scientific understanding that the

repigmentation that occurs, occurs based on the repopulation of the melanocytes originating from the natural reservoir of melanocyte stem cells in the bulge of the hair follicles?

MR. FELDSTEIN: Object to form.

THE WITNESS: The working model is that they come out of the bulge and go into the epidermis, but I can't exclude the possibility that there are other mechanisms.

BY MR. MILLS:

Q So that is the working model that is currently subscribed to for the use of JAK inhibitors for the treatment of vitiligo. Correct?

**A I wouldn't say it is specific to JAK inhibitors. It's just the working model for repigmentation of vitiligo.**

Q And the question -- anytime we see repigmentation today, it is our belief that that repigmentation is happening because the melanocyte stem cells in the hair follicle are proliferating and migrating out in the epidermis?

MR. FELDSTEIN: Objection. Misstates his testimony.

THE WITNESS: I think the general

feeling is that that would be the predominant mechanism in most cases.

BY MR. MILLS:

Q Who is Richard Flavell, F-L-A-V-E-L-L?

**A An immunologist at Yale.**

Q Do you have any kind of relationship with Richard Flavell?

MR. FELDSTEIN: Object to form.

THE WITNESS: I worked in his research laboratory.

BY MR. MILLS:

Q That was during your postdoctorate?

**A Yes.**

Q You had two people that you worked with -- two research labs you worked in as part of your postdoc. Is that correct?

**A Yes.**

Q The first one was Susan Kaech?

**A Kaech.**

Q Kaech (pronouncing).

**A K-A-E-C-H.**

Q So you were in the Kaech lab from 2017 to 2018. Correct?

**A Yes.**

Q You were in the Flavell lab from 2018 to

2023. Correct?

**A Yes.**

Q So Richard Flavell was your postdoc supervisor for the bulk of your postdoc. Correct?

**A Yes, but I wasn't as closely tied to the lab as other people were, but yes.**

Q In paragraph 6 of your declaration, the last sentence, you say, I completed five years of postdoctoral training, studied basic immunology with world-renowned immunologists.

Do you see that?

**A Yes.**

Q When you say world-renowned immunologists, does that refer to Susan Kaech and Richard Flavell?

**A Yes.**

Q Okay. Do you know Dr. Abul Abbas?

**A I am aware of him.**

Q How are you aware of Dr. Abul Abbas?

**A He is an immunologist.**

Q Before your involvement in this case, were you aware of Dr. Abul Abbas?

**A Yes.**

Q Before you were involved in this case, how were you aware of Dr. Abul Abbas?

**A I met him when I was applying for**

**residency. I may have seen him present at some point.**

Q When you say you met him when you were applying for residency, did you apply to be a resident in the organization where he was working?

**A Yes.**

Q So you met him in the context of you were being interviewed for a residency under Dr. Abbas. Is that correct?

**A Yeah, among other people.**

Q Then you also mentioned that you may have seen presentations by him at some point?

**A Probably.**

Q So you have characterized Dr. Kaech and Dr. Flavell as world-renowned immunologists. Are you more sparing in your praise for Dr. Abbas? Are you aware that he is a world-renowned immunologist?

MR. FELDSTEIN: Object to form.

THE WITNESS: I know he has a long career. I am not as familiar with his work as I am with Drs. Kaech and Flavell.

BY MR. MILLS:

Q Are you aware that Dr. Flavell and Dr. Abbas co-wrote a book together entitled Genetic Models of Immune and Inflammatory Disease?

**A I don't recall being aware of that, no.**

Q Have you ever spoken with Dr. Flavell about Dr. Abbas?

**A No.**

Q Have you ever spoken with Dr. Flavell about this case?

**A No.**

Q Have you ever spoken with Dr. Flavell about the subject matter in this case?

**A No.**

Q Have you ever spoken with Dr. Kaech about Dr. Abbas?

**A No.**

Q Have you ever spoken with Dr. Kaech about this case?

**A No.**

Q Have you spoken with Dr. Kaech about the subject matter of this case?

**A No.**

Q In preparing your declaration, did you speak with any individual regarding the subject matter of this case other than the attorneys?

**A I don't think so, no.**

Q In preparing your declaration for this case, you did not speak with John Harris regarding

the subject matter in this case. Is that correct?

**A That is correct.**

Q When was the last time you spoke with Dr. Harris?

**A I don't remember. Probably at a meeting that we were both at. I don't remember.**

Q When you say a meeting that you were both at, what do you mean?

**A A meeting, like a dermatology conference where he was attending and I was attending.**

Q As part of your preparation of your declaration in this case, did you speak with Dr. Richmond?

**A No.**

Q At any point during your involvement in this case, have you spoken with either Dr. Harris or Dr. Richmond?

**A No -- wait. Can you ask it again.**

Q At any point during your involvement in this case, have you spoken with either Dr. Harris or Dr. Richmond?

**A Not about the case. I probably interacted with Dr. Richmond as part of Global Dermatology Talks.**

MR. MILLS: Are we ready for a break?

MR. FELDSTEIN: Ten minutes away it looks like.

BY MR. MILLS:

Q Okay. Let's take a look at your publications list in Exhibit 2006.

THE COURT REPORTER: It's in 1006 or 2006?

MR. MILLS: Yes, Exhibit 1006 [sic]. I'm sorry.

BY MR. MILLS:

Q Please take a moment to review your publications list.

MR. FELDSTEIN: So what exhibit are we in?

MR. MILLS: So -- no, it is Exhibit 2006. It is Exhibit 2006.

THE WITNESS: My CV?

MR. MILLS: Yes. If we called the CV 1006, it should be 2006. Having a rough day.

BY MR. MILLS:

Q While you are reviewing your publication list, what I would like you to do is identify for me if there is any publications where you have published direct research that you have done on

vitiligo.

**A Okay. I only see some review articles that address vitiligo.**

Q So you don't have any publications where you performed direct research on vitiligo. Is that correct?

**A Yes.**

Q I counted 15 publications mention COVID-19. Does that sound about right?

**A I would have to count them, but yeah.**

Q I also didn't find any mention in your CV about the word "interleukin." Does that sound correct, there are no publications with the title using "interleukin"?

**A That I would be surprised if that's true.**

Q Why don't you go ahead and take a look for interleukin for IL-15 or IL-2. Let me know if you find any of those.

**A It has to be in the title or it could be discussed in the manuscript?**

Q Well, right now I'm trying to see -- all I have now is the title. So I'm trying to see what you notice about from the titles. Let me know.

**A Number 16, it doesn't say the word "cytokine," but the molecular analysis is about**

**cytokines.**

Q Hold on just a second.

**A Yeah, yeah.**

Q So this is page 11?

**A Yes, page 11, reference 16.**

Q This is tofacitinib?

**A Correct.**

Q So that is a JAK inhibitor. Correct?

**A Correct.**

Q So reference 16 is about using a JAK inhibitor for cutaneous sarcoidosis. Correct?

**A Yes.**

Q Okay. Thank you.

**A I think what I am finding challenging is a lot of the articles discuss cytokines, they are just not appearing in the title. Would you like me to point all of those references out, or just stick to the titles?**

Q Let's start with in the title. Is there anything in the title that tells us that you are doing direct research on IL-15 or IL-2?

**A You are not interested in IL-17 in the title?**

Q Let's come back to that. Just for the record, I want to be -- make sure we are clear.

So the question is right now, identify any articles that by the title we can tell that you are doing direct research on either IL-15 or IL-2.

**A My mistake. I thought it was for cytokines. Page 12, reference 40.**

Q Give me just a moment. Okay. Thank you. Any others?

**A Are you interested in studies where I recollect that IL-15 is a subject matter although it is not in the title?**

Q Let's start with just what we can tell from the titles.

**A I don't see any other where IL-15 are in the title. But if it is of interest, I would be happy to point out ones where cytokines in general or IL-15 in particular are part of the content.**

Q Okay. So with regard to entry 40 on page 12, that publication was in 2021. Correct?

**A Correct.**

Q Do you -- so now I am going to broaden my question out. So having looked and studied your publications list, are there any pre-critical dates, critical date 2017, publications by you where you did direct research on IL-15?

**A I would have been familiar with the**

**pathway at that time, but, no, I don't see any pre-2017 publications.**

Q I have the same question for IL-2. Looking at your publications list, you don't have any pre-critical date, pre-2017 publications where you did direct research on IL-2. Correct?

**A I am just thinking, because IL-2 is commonly used to treat patients with melanoma. And in the context of my prior melanoma research, I may have encountered and been familiar with the pathway, but I don't think it was in the title of anything pre-date, no.**

Q Are there any publications pre-critical date that you can identify where you did direct research on IL-2?

**A That, I can't remember.**

MR. MILLS: Okay. Are we ready for a break?

MR. FELDSTEIN: Still close.

MR. MILLS: Let's go ahead and go off the record.

(Recess taken from 12:45 p.m. to 1:30 p.m.)

BY MR. MILLS:

Q Welcome back, Dr. Damsky.

**A Thank you.**

Q During the break just now, or any of the other breaks, did you have any discussion with counsel that related in any way to your testimony?

**A No.**

Q I want to ask you some questions about the causes of vitiligo.

Are you familiar with the term "pathogenesis"?

**A Yes.**

Q What about the term "etiology"?

**A Yes.**

Q Go ahead and tell me what those terms mean.

**A Pathogenesis relates to the mechanism -- molecular mechanism by which a disease is caused.**

**Etiology tends to -- although definitions may vary, but relates to more globally what the cause is, disease associations and other things.**

Q Are you familiar with the neuro hypothesis for the pathogenesis of vitiligo?

**A Can you refer me to something specific?**

Q Is that a term that you have heard before?

**A Cutaneous nerves and the immune system are known to have relationships. I assume that that's**

**what it's referring to in the context of vitiligo.**

Q Are you familiar with the melanocytorrhagy hypothesis of vitiligo pathogenesis? I am going to spell that.

**A Yeah, please spell it.**

Q M-E-L-A-N-O-C-Y-T-O-R-R-H-A-G-Y.

**A And that is defined as what?**

Q Right now, I am asking you is that -- is that a hypothesis that you are familiar with?

**A I don't think that is a common hypothesis in vitiligo in terms of pathogenesis commonly accepted.**

Q So it is not one that you have heard of?

**A Not by that specific terminology.**

Q Is there a different terminology that you are familiar with that you think that term may refer to?

**A I am not sure what that is meant to convey, that name.**

Q It is not a terminology that you are familiar with?

**A No. But it is not a commonly accepted model in -- in vitiligo.**

Q Are you familiar with the oxidative stress -- the role of oxidative stress in causing

vitiligo?

**A I am aware that some have postulated that oxidative stress may play some role in vitiligo.**

Q Can you explain at a high level, in a sentence or two, what the thought is behind the role of oxidative stress in causing vitiligo?

**A Stress signals may relate to the pathogenesis of vitiligo is what people are trying to say with that.**

Q If you were interviewing a physician for a presentation in public and they responded to a question you asked by identifying oxidative stress as a cause of vitiligo, would you correct that person and say that that is not a valid pathogenesis for vitiligo?

MR. FELDSTEIN: Objection.

THE WITNESS: I think it is hard to say because it would relate to the context within which it was presented.

BY MR. MILLS:

Q Are you familiar with superoxide dismutase?

**A Generally.**

Q What is superoxide dismutase?

**A I believe it is an enzyme that plays a**

**role in metabolism of reactive oxygen species.**

Q And according to the oxidative stress theory of pathogenesis of vitiligo, the breakdown of superoxide dismutase and other defenses against oxidation is a mechanism through which vitiligo can occur. Is that correct?

**A I would have to see the exact reference. I imagine that hypothesis is portrayed in various ways depending on the paper.**

Q Sitting here today, the information you are aware of from your literature review, you are not aware specifically of the oxidative stress hypothesis teaching that vitiligo can be caused by oxidative reactions, that when the enzymes the body uses as a defense against them break down --

MR. FELDSTEIN: Objection.

THE WITNESS: I mean, it seems like you are reading something very specific, which I can't see, so it is hard to say. I am not sure what the figure shows there, or if there is a figure. It is hard taking conclusatory statements out of context without knowing the context that they are taken from.

BY MR. MILLS:

Q At this point, I am exploring your knowledge of the subject matter.

**A Uh-huh.**

Q If they are terms that you haven't heard of or if they are things that you don't know, it is an acceptable answer to say that is not something that you are aware of, it is not something you considered in making your declaration.

MR. FELDSTEIN: Or you could just show him the exhibit.

BY MR. MILLS:

Q So, Dr. Damsky, is that something that you evaluated and considered in making your declaration?

MR. FELDSTEIN: Object to form.

THE WITNESS: I'm sorry. Can you repeat the specific question.

BY MR. MILLS:

Q In forming your declaration, did you perform an analysis of the impact of the breakdown in the body's defenses against oxidative stress in causing vitiligo?

MR. FELDSTEIN: Object to form.

THE WITNESS: I was aware of that hypothesis, yes.

BY MR. MILLS:

Q So what language are you comfortable with when we are talking about this -- this model of pathogenesis for vitiligo that is caused by oxidative stress?

MR. FELDSTEIN: Object to form.

THE WITNESS: I mean, oxidative stress is not a one-size-fits-all description. It is very broad.

BY MR. MILLS:

Q I just want to make sure it is not a disconnect of words. So when we talk about the oxidative stress model, you have an understanding as to what that means. Is that fair?

**A Yes.**

MR. FELDSTEIN: Object to form.

BY MR. MILLS:

Q And in general, it is the model that there are enzymes that protect the cells in the skin from oxidative destruction. And then when those enzymes break down, that could result in the development of vitiligo. Is that fair?

MR. FELDSTEIN: Object to form.

THE WITNESS: I am aware of the hypothesis that, in broad strokes, is

compatible with your description is something that is out there in the literature, yes.

BY MR. MILLS:

Q I am handing you what has been premarked as Exhibit 1001. Do you recognize Exhibit 1001?

**A Yes. It is the Richmond, et al. patent.**

Q And Exhibit 1001 is the patent that is at issue in this case. Correct?

**A Yes.**

Q And when we have talked about the '505 patent, this is the document we are referring to. Correct?

**A Yes.**

Q Okay. On this first page here, you can see that Jillian Richmond and John Harris are inventors of the '505 patent. Correct?

**A Yes.**

Q Those are the same Jillian Richmond and John Harris that we were discussing earlier today. Correct?

**A Yes.**

Q About midway through the page on the left-hand side, you see where it says provisional application, and it has a Number 62/489191.

Do you see that?

**A Yes.**

Q It has a date of April 24, 2017. Correct?

**A Yes.**

Q So that patent application number, that is the patent application number that was in the disclosures that -- in your joint work with Drs. Richmond and Harris. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: There is not a dash between the 62 and 489, but, yes, otherwise it appears to be the same.

BY MR. MILLS:

Q As you understand it, the patent application numbers are -- that are in the disclosures are referring to the application for the '505 patent. Correct?

**A As far as I understand it, yes.**

Q And you see the date there next to the application number of April 24, 2017?

**A Yes.**

Q It is your understanding that April 24th, 2017 is the critical date for your opinions about the '505 patent?

MR. FELDSTEIN: Object to form.

THE WITNESS: I recognize that it is an important date in the decisions.

BY MR. MILLS:

Q Earlier in the deposition we used the term "critical date." All of those discussions about the critical date in 2017, you understand that those refer to April 24th, 2017. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I am not quite sure I can provide anything further.

BY MR. MILLS:

Q When you signed your declaration, you provided opinions about the patentability of the claims in the '505 patent. Correct?

**A Correct.**

Q When you were doing that, that evaluation required you to apply some legal principles as of a particular date. Is that correct?

**A I believe I addressed that in my declaration. I am just trying to find where it was.**

Q Take a look maybe at paragraph 34. So there, you mention April 2017. And then you refer to 2019 when the reference you are talking about was published. Is that right?

**A Yes, April 2017, and even by 2019.**

Q So the 2019 refers to the date when the Relke reference Exhibit 2055 was published?

**A I'd have to double-check the exhibit, but, yes, I believe so.**

Q And April 2017 refers to the critical date of the '505 patent?

MR. FELDSTEIN: Object to form. Legal conclusion.

THE WITNESS: I think it refers to the date that you are referring to when you were pointing me to the publication of the patent.

BY MR. MILLS:

Q So we can agree that April 24th, 2017 is the date that you used for your opinions about the patentability of the claims of the '505 patent. Is that correct?

**A I considered that that was an important date.**

Q Is there another date that you considered for the patentability of the claims of the '505 patent? Take a look at paragraph 53.

**A Yes.**

Q What are you saying about paragraph 53?

**A I see there that April 2017 is -- is listed as part of the declaration, yes.**

Q Take a look at paragraph 58, last line, paragraph.

**A Okay.**

Q Okay what?

**A I see April 2017 is mentioned there.**

Q Take a look at paragraph 65, first sentence and the last sentence.

Do you see there April 2017?

**A Yes, I do.**

Q Take a look at paragraph 70.

**A Okay.**

Q You see there again you are saying April of 2017?

**A Yes.**

Q Paragraph 72. Do you see there that you are talking about April 2017?

**A Yes.**

Q Paragraph 80. Do you see it there?

**A Yes.**

Q Do you see in paragraph 94?

**A Yes.**

Q So there, where you are discussing level of ordinary skill in the art, you are talking what

would have been recognized in the art as of April 2017?

**A Yeah. It states a POSA would have been familiar with well-known inhibitors of IL-15 and IL-15R, as described in the '505 patent and recognized in the art as of April 2017.**

Q Take a look at the last sentences of paragraph 109. There is a footnote, Footnote 4.

**A Yes.**

Q That identifies the filing of the provisional application for the '505 patent on April 24th, 2017.

Do you see that?

**A Yes.**

Q So we can keep going, but you agree that your declaration evaluates the patentability of the claims of the '505 patent as of April 2017?

MR. FELDSTEIN: Objection. Form.

THE WITNESS: I mean, I understand that April 2017 is an important date in considering this body of work.

BY MR. MILLS:

Q I am just trying to understand it. When you give your opinions about the patentability of the claims of the '505 patent, are you saying they

would have been patentable today if the patent application were filed today? That -- you understand that there is a particular date for each patent that is the critical date that determines what is prior art?

Do you understand that?

MR. FELDSTEIN: Object to form and foundation and legal conclusion.

THE WITNESS: I mean, I can say I understand it is an important date that I considered in writing my report.

BY MR. MILLS:

Q Do you offer any opinions in your declaration about the patentability of the claims of the '505 patent using a date later than April 2017 as the critical date?

MR. FELDSTEIN: Object to form.

THE WITNESS: At one point I discuss 2019, which we were reviewing recently. I would have to look through to know for sure.

BY MR. MILLS:

Q So it is possible that in your declaration you evaluated whether the '505 patent claims are patentable by using the critical date of 2019?

MR. FELDSTEIN: Object to the form. Misstates the testimony.

THE WITNESS: Yeah, it seems like April 2017 is the most commonly discussed date.

BY MR. MILLS:

Q So other than April 2017, is there a different date that you can point to for which you provided opinions regarding the patentability of the claims in the '505 patent?

**A No, not a specific alternative date.**

Q Are you offering an opinion in this case that the understanding of the person of ordinary skill in the art changed regarding the subject matter of the '505 patent between 2017 and the present?

MR. FELDSTEIN: Object to form.

THE WITNESS: Does this deal with a specific part of the declaration?

BY MR. MILLS:

Q I am asking about any of your opinions. Are there any opinions that you can point to that tell me that the understanding of a person of ordinary skill in the art changed regarding the patentability of the '505 patent claims between

2017 and the present?
MR. FELDSTEIN: Objection. Form.
THE WITNESS: I am not aware of the specific example that changed it.
BY MR. MILLS:
Q What did you -- what part of the Exhibit 1001 did you look at to understand what is the invention of the '505 patent?
MR. FELDSTEIN: Objection.
THE WITNESS: I am sorry. This is the patent itself we are looking at, 1001?
BY MR. MILLS:
Q Yes.
**A I mean, I read the whole thing.**
Q Okay. In reading the whole thing, did you come to have an understanding as to whether there is a place that particularly points out and delineates the scope of the invention of the '505 patent?
MR. FELDSTEIN: Object, form.
THE WITNESS: In the claims?
BY MR. MILLS:
Q I am just asking you the question. Is the claims -- the claims are a place that you looked for language that would particularly point out and

delineate the scope of the claims of the '505 patent?

MR. FELDSTEIN: Object to form.

THE WITNESS: I mean, that is not the only place that I looked. Right. I did look at the claims, and, yes, they seem relevant.

BY MR. MILLS:

Q Okay. The claims show up in Column 44 of the patent?

**A Yes.**

Q Do you understand that the claims recited in Column 44 of the patent delineate the scope of those -- of the invention?

MR. FELDSTEIN: Object to form.

THE WITNESS: Yes, they summarize the claims, delineate the claims.

BY MR. MILLS:

Q So you used the words "summarize" and "delineate."

You understand that the claims delineate the invention. Correct?

MR. FELDSTEIN: Object to form. Asked and answered.

THE WITNESS: I am not quite sure how

to -- the claims are the claims. Right?
Is that what you are asking?
BY MR. MILLS:
Q No. My question is whether you understand that the claims delineate what is inside and what is outside the scope of the invention of the '505 patent?
MR. FELDSTEIN: Object to form.
THE WITNESS: What do you mean by outside?
BY MR. MILLS:
Q Well, things that are outside the scope of the claim are things that are not within the scope of the claim. Let me withdraw that question and start over.
In reaching your opinions in this case, did you evaluate the scope of the claims of the '505 patent?
**A Yes.**
Q Okay. Let's take a look at Claim 1. So in evaluating the scope of the claims of the '505 patent, Claim 1 in particular, you had to come to an understanding as to what the scope of that Claim 1 is. Correct?
**A Yes.**

Q So you understand the scope of Claim 1. Is that correct?

**A Yes.**

Q There are two steps in Claim 1. Correct?

**A I am not sure if steps is the right nomenclature. Yes, I see two different parts.**

Q Take a look at paragraph 161 of your declaration.

Do you see in paragraph 161, I considered every step cited and necessary in the claim of the '505 patent?

**A Yes.**

Q And it is your opinion that the first step of the claim is identifying the subject in need of vitiligo -- I'm sorry. I am going to start that question over.

It is your opinion that the first step of the claim is identifying a subject in need of treatment. Correct?

**A Yes, that is what it says.**

Q It is your opinion that the first step of Claim 1 is simple and predictable to a person of ordinary skill in the art. Correct?

**A Yes.**

Q It is your opinion that the second step of

Claim 1 is administering a therapeutically effective amount of an inhibitor of IL-15 or the IL-15 receptor to the subject. Correct?

**A Yes.**

Q And other than those two steps, there is no additional steps in Claim 1. Correct?

**A In Claim 1, no, I don't see any additional steps.**

Q I want to focus on the words "an inhibitor of IL-15."

**A Uh-huh.**

Q What is that -- what does it mean, an inhibitor of IL-15?

MR. FELDSTEIN: Object to form.

THE WITNESS: My summary would be that it inhibits the biologic effect of IL-15 or its receptor.

BY MR. MILLS:

Q Is JAK signaling a biological effect of IL-15?

**A It can be.**

Q So in your opinion, is a JAK inhibitor an inhibitor of IL-15 within the scope of Claim 1?

**A I would need to know more information. JAK inhibitors have various potency against**

**different JAK proteins. And I think the extent to which a JAK inhibitor could inhibit IL-15 would be variable.**

Q So let's start with ruxolitinib. Did I say that correctly?

**A Yes.**

Q So if someone administers an effective amount of ruxolitinib to a vitiligo patient, are they practicing Claim 1?

**A No.**

Q Why not?

**A JAK inhibitors act broadly, and I don't know that one could know that the effect of JAK inhibition in that setting was via inhibition of IL-15.**

Q So how is it that we determine -- let me back up and ask the question first.

So, categorically, you are ruling out ruxolitinib as being an inhibitor of IL-15. Is that correct?

**A No, I wouldn't categorically rule it out. I would just say in 2017, based on the literature that we had in the state of the field, we didn't know that the mechanism of JAK inhibition in vitiligo was by IL-15.**

Q So you testified earlier that when you inhibit JAK -- we can be specific.

Let's -- so if we are inhibiting JAK1 and 3.

**A Uh-huh.**

Q Is that what ruxolitinib does?

**A No.**

Q What does it do?

**A It inhibits JAK1 and 2.**

Q So maybe tofacitinib?

**A Yes.**

Q Tofacitinib inhibits JAK1 and 3. Is that correct?

**A And, to some extent, 2, yes.**

Q Let's ask the questions about tofacitinib.

Is tofacitinib an inhibitor of IL-15 within the meaning of Claim 1?

MR. FELDSTEIN: Object to form. Calls for legal conclusion, beyond the scope.

THE WITNESS: It is really complicated. I don't know that we can assume that. I think the field would suggest that the predominant mode of action was through interferon gamma.

BY MR. MILLS:

Q So you agree that JAK1, 3 signaling is a downstream effect of IL-15. Correct?

**A Yes, but the inhibitory concentrations of each JAK inhibitor for various cytokines downstream of various JAKs is variable.**

Q So as you sit here today, your testimony is that tofacitinib may or may not be an inhibitor of IL-15?

MR. FELDSTEIN: Object to form. Misstates the testimony.

THE WITNESS: I think it is hard to have a generic discussion. It would depend on the context.

BY MR. MILLS:

Q On what context would it depend?

**A Which JAK inhibitor.**

Q I think we were talking about tofacitinib.

**A Tofacitinib, what dose it was used at.**

Q Let me ask a new question. Do you agree that administering a therapeutically effective amount of tofacitinib to a subject in need of treatment satisfies Claim 1?

MR. FELDSTEIN: Object to form.

THE WITNESS: No. I think that

people would think that tofacitinib or any JAK inhibitor was acting through interferon gamma in vitiligo.

BY MR. MILLS:

Q So can you categorically rule out tofacitinib as qualifying under the category of an inhibitor of IL-15?

MR. FELDSTEIN: Object to form. Beyond the scope.

THE WITNESS: Can you just say it again.

BY MR. MILLS:

Q Can you definitively rule out tofacitinib as qualifying under the category of inhibitor of IL-15 as used in Claim 1 of the '505 patent?

MR. FELDSTEIN: Object to form. Beyond the scope.

THE WITNESS: I would just say IL-15 was known to use the JAK-STAT pathway. It would have to be evaluated.

BY MR. MILLS:

Q So today as we sit here, it may or may not be the case that tofacitinib is an inhibitor of IL-15?

MR. FELDSTEIN: Object to form.

Beyond the scope.

THE WITNESS: I mean, it inhibits a lot of -- the medication inhibits a lot of cytokines. So I think it would be hard to pin it on any one.

BY MR. MILLS:

Q Is it your opinion that if something is inhibiting IL-15 signaling but is also inhibiting signaling from other cytokines that is not an IL-15 inhibitor is used --

THE COURT REPORTER: I'm sorry. Would you start that again? I'm sorry.

BY MR. MILLS:

Q If something is inhibiting IL-15 signaling but is also inhibiting another cytokine signal, that then it is not an inhibitor of IL-15 within the scope of Claim 1?

MR. FELDSTEIN: Object to form. Beyond the scope.

THE WITNESS: No. I mean, JAK inhibitors can inhibit 50 or more proteins. I think that level of nonspecificity is distinct and notable.

But to answer your question, to the extent that something inhibited IL-15, I

would expect that it is an IL-15 pathway inhibitor. I think just the JAK inhibitors are so broad in their activity, it is hard to really pin it on any one.

BY MR. MILLS:

Q Do you know what CTLL-2 cells are?

**A I can't recall if I've encountered those.**

Q Does cytotoxic T lymphocyte line -- cell line 2, does that sound familiar?

**A Cytotoxic -- CTL, cytotoxic lymphocyte sounds familiar, yeah.**

Q Are you aware that CTLL-2 cells are T cells that express IL-15 receptor?

**A Is this in regard to a specific document or just in general?**

Q In general, is that something you are familiar with?

**A Which receptor?**

Q IL-15 receptor.

**A All three parts?**

Q Well, why don't we disambiguate that.

So there is both a heterodimeric IL-15 receptor that can be expressed on a T-cell. Correct?

**A Beta gamma, yes.**

Q There is also a heterotrimeric IL-15 receptor that can be expressed on a single cell membrane. Correct?

**A Yes. But it is not thought to be the predominant mode of signaling, but yes.**

Q So in that case for the heterotrimeric receptor that's on a single cell that's alpha, beta and gamma that are associated together on the same cell membrane. Correct?

**A Yes, that is my understanding.**

Q And the third IL-15 receptor that exists is a heterotrimeric transreceptor wherein beta and gamma are expressed on the immune cell and the alpha receptor is expressed on the bystander cell. Is that correct?

**A Alpha may be expressed on an immune cell too, but, yes, generally a different cell, yeah.**

Q And maybe there is a fourth possibility. What if the beta and gamma are expressed on the immune cell and the alpha is bound to an IL-15 and they are soluble and form a complex with the beta and gamma? Are you familiar with that?

**A I mean, I would have to review the specific reference and the extent to which it is relevant, but it sounds plausible.**

Q Okay. So now let's go back to the question. So you had asked which IL-15 receptor. We have described four of them that exist. Okay. And my question was whether you are aware that CTLL-2 cells are T cells that express the IL-15 receptor. And go ahead and answer that question.

MR. FELDSTEIN: Object to form.

THE WITNESS: I just want to clarify. I am not sure that I would characterize it as four IL-15 receptors. I think I would characterize it as three IL-15 receptors. I just wanted to clarify that.

If you would ask your question again.

BY MR. MILLS:

Q So my question is, when you signed your declaration, were you aware that CTLL-2 cells express the IL-15 receptor?

MR. FELDSTEIN: Object to form.

THE WITNESS: I am sorry. Now that we are going back to this question, are we talking about any version of IL-15 receptor or some specific?

BY MR. MILLS:

Q Let's start with any version of IL-15 receptor.

**A I would have to review the relevant reference to answer.**

Q So you don't know sitting here right now?

MR. FELDSTEIN: Object to form. Misstates his testimony.

THE WITNESS: I mean, there are tens of thousands of cell lines and primary cell types. I don't know for that particular one.

BY MR. MILLS:

Q Okay. And then going back to the claim. In Claim 1, when it says inhibitor of the IL-15 receptor -- when it says the IL-15 receptor, does that include all iterations of the IL-15 receptor or only some of them?

**A All of them.**

Q And then also when we are talking about IL-15 -- so we talked about that the IL-15 might be bound to the alpha receptor on a bystander cell. I want to ask you a question.

Is it kind of a useful analogy that the alpha receptor is kind of a like a baseball glove that holds onto the IL-15?

MR. FELDSTEIN: Object to the form.

THE WITNESS: I am not sure in what

sense you mean.
BY MR. MILLS:
Q Well, we talked earlier that alpha doesn't -- it's not engaging in cytoplasmic signaling itself. Its function is to present the IL-15 to the beta gamma receptors.
Do you recall that?
**A Yes, that is the predominant function.**
Q So -- and that is why I am asking about this analogy. It is basically a baseball glove that holds onto the IL-15. And the IL-15 would be the baseball. I am not going to press you too hard on that, but at a high level, is that -- is that a functional analogy?
MR. FELDSTEIN: Object to form.
THE WITNESS: It's -- yeah, it is usually the glove would be attached to something typically. I don't know that I would phrase it in that way.
BY MR. MILLS:
Q So typically, the alpha is attached to the cell membrane of the bystander cell or the immune cell. Is that correct?
**A Yes, the other cell.**
Q Let's start with the bystander cell. So

the predominant mechanism is that this bystander cell is producing both alpha and IL-15 and associating them together in a complex in the endoplasmic reticulum. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I would have to double-check to what extent it happens specifically in the endoplasmic reticulum. But the thought with trans-signaling is, yes, the IL-15 receptor alpha is on one cell and it is showing the cytokine to another cell with the beta gamma.

BY MR. MILLS:

Q Is it your understanding that the predominant mechanism of IL-15 signaling occurs when a single bystander cell produces both IL-15 and alpha and expresses those two in a complex on a cell membrane?

MR. FELDSTEIN: Object to form.

THE WITNESS: I am sorry. Can you ask it again.

BY MR. MILLS:

Q Is it your understanding that the predominant mechanism by which the body produces IL-15 is that a single cell produces both the IL-15

and the alpha receptor associates them together into a complex that is presented on the membrane of that-cell?

MR. FELDSTEIN: Object to form.

THE WITNESS: That might be one way that IL-15 alpha and IL-15 cytokine get together is they are produced by the same cell.

BY MR. MILLS:

Q Do you know sitting here today whether that is understood to be the predominant mechanism in the body?

MR. FELDSTEIN: Object to form.

THE WITNESS: That is the high affinity receptor complex. I think it would depend on the scenario. Are we talking about homeostasis or disease process or -- to say what the predominant is.

BY MR. MILLS:

Q So let's start with just naturally. You used the word "homeostasis." Go ahead and tell us what homeostasis means?

**A Just the natural state of being alive.**

Q In the natural state in the body, a single

cell is making IL-15 and alpha. It is putting them together in a complex and presenting that complex onto the cell membrane. Correct?

**A Yeah, and that summarizes transpresentation.**

Q You mentioned disease state. What is different between homeostasis versus disease state?

**A Typically in a disease state you are out of homeostasis at least for a period of time, and there may be overactive inflammation, there may be underactive inflammation. There may be another problem. It is a broad term.**

Q Are you aware that activated T cells are more prone to express the alpha receptor than unactivated T cells?

**A We are talking about IL-15 alpha? I imagine there is some context in which that has been shown.**

Q Are you aware that activated T cells also more highly express the alpha receptor for IL-2?

**A In addition to, yes, regulatory T cells.**

Q You are saying that regulatory T cells express IL-2 alpha receptor?

**A Yes.**

Q Are CD8 positive T cells regulatory

T cells?

**A In the most common use of that phrase, no. People are typically referring to C4 positive cells when they say T regular.**

Q If we are talking about PMEL antigen specific CD8 positive T cells, are those T regulatory cells?

**A No.**

Q Are those cytotoxic effector T cells?

**A They could be.**

Q How would you know whether they are cytotoxic effector T cells if they are CD8 positive T cells?

**A You might look for expression of certain proteins which are known to be associated with that state.**

Q Which proteins would one look at?

**A Look at interferon gamma. There are others that people look at. There's more than that.**

Q So what others can you --

**A Granzyme B, G-R-A-N-Z-Y-M-E, B. Perforin, P-E-R-F-O-R-I-N. Those are a couple that came to mind. There are probably others.**

Q So going back to Claim 1. When it says an

inhibitor of the IL-15 receptor, do you agree that that includes inhibitors of IL-15 receptor alpha?

**A Yes.**

Q When Claim 1 says inhibitor of the IL-15 receptor, do you agree that that includes inhibitors of IL-15 receptor beta?

**A Yes.**

Q And that is also called IL-2 receptor beta?

**A Yes.**

Q It is also called CD122. Correct?

**A Yes.**

Q You agree that when Claim 1 recites inhibitor of the IL-15 receptor, that also includes inhibitors of IL-15 receptor gamma?

**A Yes.**

Q Which is the same as IL-15 -- sorry -- which is the same as IL-4 receptor gamma?

**A It is usually referred to as IL-2 receptor gamma.**

Q But it could also be called IL-4 receptor gamma?

**A I have never seen it referred to like that, but I suppose someone could call it that if they wanted to.**

Q Same answer for IL-7?

**A If someone wanted to call it that, they could.**

Q And IL-9?

**A Yes, IL-9 also use that receptor.**

Q And IL-21?

**A Yes.**

Q That is why they call it gamma C, it is gamma common because it is the same receptor for all six of those cytokines. Correct?

**A Is that six? Yes.**

Q And for each of those, for the gamma -- so I guess we can call gamma also CD132. Right?

**A Correct, yes.**

Q So Claim 1, when it says the IL-15 receptor, it not only encompasses some inhibitors of CD132, but it encompasses any inhibitor of CD132. Correct?

**A Claim 1 says an inhibitor, yes.**

Q Same question for CD122, the beta. So when it says inhibitor of the IL-15 receptor, it includes any inhibitor of CD122. Correct?

**A Yes.**

Q And same question for alpha? When it says the inhibitor of IL-15 receptor, that encompasses

any inhibitor of IL-15 alpha. Correct?

**A Yes.**

Q So for each one of those subunits, rather than asking you over and over again, so for each one, if the answer is different for one, go ahead and let me know. In Claim 1, it could be an antibody. Correct?

**A Yes.**

Q Claim 1 is not limited to an antibody. Correct?

**A Correct.**

Q In Claim 1, the inhibitor could be a peptide inhibitor. Correct?

**A Yes.**

Q And then looking at Claim 2, I guess -- I should ask first. You understand the difference between an independent claim and a dependent claim?

**A I think broadly, yes.**

Q So in Claim 2, everything that is listed in Claim 2 is inside the scope of Claim 1, but Claim 1 is broader. Is that correct?

**A That is my understanding, yes.**

Q So in Claim 2, it tells us that Claim 1 encompasses using an inhibitory nucleic acid targeting IL-15 or the IL-15 receptor. Correct?

**A Yes.**

Q So Claim 1 is broader than that. In Claim 1, the inhibitor could be an inhibitor -- a nucleotide inhibitor that inhibits IL-15 or any of those IL-15 receptor subunits, but that doesn't actually anneal with the nucleotide sequence representing IL-15 or a subunit of the IL-15 receptor. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: That was a long question. Can you repeat.

BY MR. MILLS:

Q Yeah. So in Claim 2, it says that the -- the inhibitory nucleic acid must target either IL-15 or the IL-15 receptor. Correct?

**A Yes.**

Q And you agree that when it talks about targeting the IL-15 receptor, it could be targeting the alpha receptor. Correct?

**A Yes.**

Q It could be targeting the beta receptor. Correct?

**A Yes.**

Q It could be targeting the gamma receptor. Correct?

**A Yes.**

Q Okay. In Claim 1, the nucleotide -- sorry -- the inhibitory nucleic acid doesn't have to target IL-15 or the IL-15 receptor?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for a legal conclusion.

THE WITNESS: That is not how an inhibitory nucleic acid works. They are not supposed to.

BY MR. MILLS:

Q Okay. So in your opinion, for the inhibitory nucleic acid to inhibit IL-15, the nucleic acid must itself be annealing to a sequence that corresponds in some respect to either IL-15 or alpha, beta, or gamma subunits. Is that correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: Nucleic acid targeting would mean that, as one example, there is a nucleic acid that binds to the mRNA that enclosed the protein of IL-15 or the receptors.

BY MR. MILLS:

Q So it is the target that you were just talking about. Correct?

**A The target in that instance would be the MNRA.**

Q So Claim 2 talks about it has to be targeting IL-15?

**A Yes.**

Q Claim 1 doesn't have language about targeting. Correct?

MR. FELDSTEIN: Object to form. Legal conclusion, beyond the scope.

THE WITNESS: No, I don't see the word "targeting" in Claim 1.

BY MR. MILLS:

Q So I don't have a cytokine to identify for you, but just -- or an enzyme. But just imagine for the moment that there is an enzyme that is necessary to get IL-15 from inside the cell, IL-15 and alpha. So they associate in that cell like we talked about. And let's imagine that there is an enzyme that without it, IL-15 never gets expressed on the outside of the cell.

Okay. Are you with me so far?

**A I mean, I understand the hypothetical scenario, yeah.**

Q So if I have a nucleic acid that prevents that enzyme from being created so that there is

nothing to get the IL-15 on the outside of the cell, and that inhibits IL-15 signaling, you agree that that would be nucleic -- an inhibitory nucleic acid within the scope of Claim 1 even though its sequence does not anneal to a sequence for IL-15 or for one of the receptor subunits of IL-15?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I would have to review the actual underlying information. It is hard to make a conclusion based on a hypothetical.

BY MR. MILLS:

Q So looking at Claim 1, you don't know whether or not that would be within the scope of Claim 1?

MR. FELDSTEIN: Objection. Misstates the testimony.

THE WITNESS: I would have to review the science, I think.

BY MR. MILLS:

Q So -- I mean, the science is as I just gave it to you. So in the hypothetical, there is an enzyme that is necessary to express IL-15 out on

the outside of the cell. And that enzyme is not being created because of the inhibitory nucleic acid. And because of that, the IL-15 never gets out of the cell and because of that there is no beta gamma signaling. There is no proliferation of the T cells.

So in that scenario, is that an inhibitor of IL-15?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I don't think I can say it -- what prevents it from getting out of the cell means. What percentage of it gets stuck? What else is the molecule doing? I think it is just very hard to make a conclusion based on that hypothetical.

BY MR. MILLS:

Q Just for now, let's assume it all gets stuck and it gets eaten up in the cell and it never makes it out. Regardless, it doesn't really matter because in the hypothetical I already told you before we were getting IL-15-induced proliferation and now we are not. So it has turned off the

proliferation of the T cells.

MR. FELDSTEIN: Is that a question?

BY MR. MILLS:

Q Is that an IL-15 inhibitor within the scope of Claim 1 even though the inhibitory nucleic acid does not anneal --

THE COURT REPORTER: I'm sorry. Can you start the question again, please.

BY MR. MILLS:

Q Okay. I am going to start the question over.

So in our scenario we are administering a nucleic acid that does not anneal to any portion of a messenger RNA for either IL-15 or any of the three subunits of IL-15 receptor.

**A I understand.**

Q But nonetheless, when I administer it, where before I was observing IL-15-induced cell proliferation, all of that proliferation goes away when I administer the nucleic acid.

So is that nucleic acid an inhibitor of IL-15?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I just don't know what else that hypothetical molecule could be doing that might be affecting proliferation of the cells.

BY MR. MILLS:

Q Okay. So tell me about that. So just -- just the fact that administering a molecule gets rid of IL-15-induced proliferation of T cells doesn't tell us whether or not the thing that we administered is an inhibitor of IL-15 or the IL-15 receptor within the scope of Claim 1?

MR. FELDSTEIN: Object to form. Calls for legal conclusion, beyond the scope.

THE WITNESS: Yeah, I am not sure I have anything more I can say about it.

BY MR. MILLS:

Q So in this scenario, it would be speculative to say whether or not the inhibitory nucleic acid that gets rid of the IL-15-induced signaling is an inhibitor of IL-15 or the IL-15 receptor within the scope of Claim 1?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion, misstates the testimony.

THE WITNESS: I mean, I think you are trying to suggest that it is conceivable that that could happen. Without knowing what you are talking about, I don't have a specific example to say definitively one way or the other.

BY MR. MILLS:

Q I mean, what I am really getting at is -- is an IL-15-induced T-cell proliferation assay dispositive as to whether something is an inhibitor of IL-15 or the IL-15 receptor within the scope of Claim 1?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I would say it could be.

BY MR. MILLS:

Q So how do we know? So we are doing an IL-15 proliferation assay. So for instance, I have T cells, CTLL-2 T cells, and I dump a bunch of IL-15 in there and they go crazy with proliferating. Okay.

**A Uh-huh.**

Q And then I put something else in and all

of a sudden they stop proliferating. At that point, do I know that that is an inhibitor of IL-15 or the IL-15 receptor or is it inconclusive?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I mean, it would depend on the other -- other parameters in the cell. Are they all dead? Are they -- has something else impacted it? I think it is just hard to say. It could be an IL-15 inhibitor.

BY MR. MILLS:

Q You said are they all dead?

**A Yes.**

Q So if they die, then we know that it is an IL-15 inhibitor?

MR. FELDSTEIN: Object to form. Misstates the testimony.

THE WITNESS: No. I would say it is probably doing something else in that scenario.

BY MR. MILLS:

Q So if they die when we administer the compound, then we think it is not an IL-15

inhibitor?

MR. FELDSTEIN: Object to form. Calls for legal conclusion, beyond the scope.

THE WITNESS: It is just so hard to answer without any specific details.

BY MR. MILLS:

Q It is kind of complicated.

MR. FELDSTEIN: Object to form. Misstates testimony.

THE WITNESS: No, it is just hard to answer your questions without any specific details about the system.

BY MR. MILLS:

Q So what details do you need to answer the question?

MR. FELDSTEIN: Object to form.

THE WITNESS: Do the targeted cells express the receptor for IL-15?

BY MR. MILLS:

Q Yes.

**A I am sorry. And you said they are going crazy and they --**

Q Let me give the scenario again. So these are cells that we know express IL-15 receptor. We

administer IL-15 and they proliferate rapidly.

**A Uh-huh.**

Q Then we add our compound that we are testing, and the proliferation ceases. So does that tell us that this is an IL-15 inhibitor?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I would say it could be an IL-15 inhibitor, but it is hard to say for sure, again, just without additional detail.

BY MR. MILLS:

Q What additional detail would you need?

MR. FELDSTEIN: Object to form.

THE WITNESS: I mean, just any data at all just beyond the hypothetical, I think.

BY MR. MILLS:

Q What data is it you're looking for?

MR. FELDSTEIN: Object to form.

THE WITNESS: What is the baseline proliferation rate? How high does it go when medication or compound is administered? Is it dose dependent? I

don't know, it would just depend.
BY MR. MILLS:
Q Okay. So let's assume it is a dramatic dose dependent increase in proliferation when IL-15 is administered. And then when the compound is administered, it goes back to baseline. Is that an inhibitor of IL-15?
MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.
THE WITNESS: I would say it could be, yeah.
BY MR. MILLS:
Q So it could be or maybe it is not? It is indeterminate?
MR. FELDSTEIN: Object to form. Misstates the testimony, beyond the scope, calls for legal conclusion.
THE WITNESS: I would just say it could be.
BY MR. MILLS:
Q So if it could be, is it also possible that it might not be?
MR. FELDSTEIN: Object to form.
THE WITNESS: Recognizing that,

again, we just need actual details, I suppose.

BY MR. MILLS:

Q So we have been talking about in vitro assays. Is that correct?

**A Yes.**

Q Let's talk about binding assays. Do you know what binding assays are in this context?

**A I assume you are meaning the cytokine binding to the cytokine receptor, yes.**

Q Can you give me an example of just a binding assay that is used to -- for IL-15?

**A Like a parameter, like a KD value?**

Q Or is there a name of a binding assay that you are familiar for evaluating whether something is an inhibitor of IL-15 or the IL-15 receptor?

**A Well, I think one question is binding, and usually that is assessed through determining the KD value.**

Q So in a sentence or two, at a high level, how is a binding assay performed for IL-15?

**A Part or all of the receptor might be put in plastic part of all of a cytokine -- a plastic dish or a test tube with part or all of the cytokine. Usually mass spectrometry would be used.**

Q So when you said in plastic, you mean it is in a plastic container or a well or a vial?

**A Yeah, in a biochemical binding assay, yes.**

Q Are you familiar with thymidine incorporation assays?

**A I know the term.**

Q What type of assay is that?

**A Usually proliferation assays.**

Q Okay. So that is a proliferation assay. If I perform a binding assay for a compound in the presence of IL-15, so I am trying to evaluate -- let's just take as an example IL-15 to IL-15 alpha. I am trying to inhibit that binding interaction. So how am I going to do that in -- before 2017?

**A I think you use standard assays to measure that.**

Q So what are those standard assays?

**A KD value determination.**

Q So the KD is the output that you calculate. Correct? The lower the KD the better the inhibitor, or is it the other way around?

**A The lower. Knowing that it is negative log, yeah.**

THE COURT REPORTER: I'm sorry? What?

THE WITNESS: Lower is better.
BY MR. MILLS:
Q Okay. So lower KD is a more powerful inhibitor?
**A Binds more strongly.**
Q Okay. And because it binds more strongly to target, it is inhibiting the IL-15 better?
**A It is possible.**
Q Okay. But it is also possible that it doesn't?
**A May do so to a lesser degree.**
Q So you said that there were standard binding assays for IL-15. Can you give me a list of ones that you know.
**A I can't recall any of them off the top of my head.**
Q If I am performing a binding assay where I am putting IL-15 and IL-15 receptor alpha together and then I am adding a compound to see how much that inhibits the binding of IL-15 to IL-15 alpha, is there -- well, let me just ask.
Assuming that I find that it interferes with the binding of IL-15 to IL-15 alpha, at that point can I conclude that I have an inhibitor of IL-15 or the IL-15 receptor within the scope of

Claim 1?

MR. FELDSTEIN: Object to form. Calls for legal conclusion.

THE WITNESS: I mean, if something inhibits the binding of IL-15 to IL-15R alpha, it would qualify as an IL-15 pathway inhibitor.

BY MR. MILLS:

Q So the claim language says an inhibitor of IL-15 or the IL-15 receptor. Just now you used different language. You said IL-15 pathway inhibitor. So for your opinions, are you interpreting the term inhibitor of IL-15 or the IL-15 receptor to mean IL-15 pathway inhibitor?

**A No. I mean, I guess the most specific phrasing would be inhibitor of IL-15 or IL-15 receptor.**

Q Okay.

**A So maybe that was a bad choice of words.**

Q Okay. So I do my binding assay and I find out that my compound inhibits the binding in vitro. At that point, my job is done, I know that this is a compound that fits within the scope of this claim. Is that correct?

MR. FELDSTEIN: Object to form.

Beyond the scope, calls for legal conclusion.

THE WITNESS: Yeah, I mean, I must say I am getting a little bit lost when you add on "within the scope of this claim" at the end.

BY MR. MILLS:

Q Why? Do you not have an understanding as to what the scope of the claim is?

**A I understand the scope of the claim.**

Q Okay. So why -- I don't mean to make my question confusing. I am trying to understand.

So what about the question is confusing by saying within the scope of Claim 1?

**A Maybe if you could repeat the question and I will try again.**

Q So in this scenario, I have done a binding assay and I have reported a KD for the compound that indicates that it inhibits the binding of IL-15 to IL-15R alpha in vitro. So at that point, is my job done so that I know that that compound fits within the scope of Claim 1 as an inhibitor of IL-15 or the IL-15 receptor?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for a legal

conclusion.

THE WITNESS: I mean, I might like to see that it also has some biologic effect beyond the binding in addition.

BY MR. MILLS:

Q Okay. So the binding assay itself isn't enough to conclusively determine? It's necessary, but not sufficient? Is that your testimony?

MR. FELDSTEIN: Object to form. Scope, calls for legal conclusion.

THE WITNESS: I mean, if it is binding, I think one possibility is that it's inhibiting.

BY MR. MILLS:

Q So the binding assay that tells me that the compound is inhibiting the association of IL-15 with IL-15 alpha may or may not indicate that this is an inhibitor of IL-15?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I would say generally it would suggest that it is an inhibitor.

BY MR. MILLS:

Q So it suggests that it is an inhibitor,

but it is not definitive. Is that correct?
MR. FELDSTEIN: Same objections.
THE WITNESS: In hypothetical terms, I suppose so.
BY MR. MILLS:
Q So hypothetically, not everything that blocks the association of IL-15 with IL-15A is an inhibitor within the scope of Claim 1. Is that correct?
MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.
THE WITNESS: Again, I would -- it would depend on the specific compound, but it could fall within the scope.
BY MR. MILLS:
Q Is the answer different if we are talking about the beta subunit? So now we are doing an assay where we are looking at binding of IL-15 to beta and we introduce the compound and it gives us the KD that says that that is an inhibitor of the binding of the two, but that is still inconclusive as to whether this is an inhibitor of IL-15 or the IL-15 receptor within the scope of Claim 1. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I think it would -- it could be interpreted to be an inhibitor based on that scenario.

BY MR. MILLS:

Q Okay. So you are saying it could be interpreted to be. Is it conclusive that it is an inhibitor or at this point is there still a question as to whether it is an inhibitor?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: Yeah, I would just say I would generally assume that it is an inhibitor if it binds to it and blocks interaction.

BY MR. MILLS:

Q So when we are talking about IL-15 to alpha, you said that it may be an inhibitor but we can't say for sure when it is blocking the interaction.

When we are talking about IL-15 to beta, you are saying even though it is blocking the interaction, it may -- we are going to assume at this point that it is an inhibitor. Is that

correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I think with broad statements, it is hard to give very specific answers.

BY MR. MILLS:

Q But I mean, we are trying to understand the claim scope here and whether the inhibition of blocking is what is determinative of whether something is an inhibitor of IL-15 or the IL-15 receptor. So for alpha, you said it is not determinative, it is suggestive. For beta, you said that's determinative. Is that your answer?

MR. FELDSTEIN: Object to form. Misstates the testimony, beyond the scope.

THE WITNESS: I would say for alpha and the cytokine, beta gamma and the cytokine, if it is blocking interaction with the receptor, it is probably an inhibitor.

BY MR. MILLS:

Q So you are saying probably, but you can't say with certainty that it is an inhibitor?

MR. FELDSTEIN: Object to form.

THE WITNESS: I would say it is

probably an inhibitor.
BY MR. MILLS:
Q When you are saying it is probably an inhibitor, you are leaving open that there is a possibility it is not an inhibitor?
**A I mean, sometimes there is just a one-off example that doesn't reflect.**
Q So the same question for gamma now.
**A Uh-huh.**
Q It is blocking the binding. The binding doesn't happen. Is that conclusive that it is an inhibitor of IL-15 or the IL-15 receptor, or simply suggestive?
MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.
THE WITNESS: I would have the same answer. It is probably an inhibitor.
BY MR. MILLS:
Q Okay. So that was all binding studies. You were saying, well, maybe there is something we do to confirm after the binding study. Is that an in vitro proliferation assay?
**A That would be one example.**
Q Okay. And that is what we were talking

about before where I have cells that express beta and gamma or alpha, beta, gamma. I administer IL-15, they proliferate. I administer the compound, the proliferation stops. So that is an in vitro proliferation assay. Correct?

**A Yeah, I mean, usually there is some specific way to measure proliferation. But, yeah. If you are following proliferation, yes.**

Q When you say ways to measure proliferation, we are counting cells either through fluorescence or something else that allows us to quantify cells?

**A Yes.**

Q Okay. So in vitro proliferation assay, at that point, you know, once it is inhibiting that, at this point, are we conclusive now we know that it is an inhibitor of IL-15 or the IL-15 receptor?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I guess I would have the same answer that it could be.

BY MR. MILLS:

Q So even after an in vitro IL-15 proliferation assay, at that point you still don't

know for sure whether or not the compound is an inhibitor of IL-15 or the IL-15 receptor. Is that correct?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I mean, in the example -- the broad examples that you are giving, I think it would be highly suggestive that it is.

BY MR. MILLS:

Q Okay. What assay is left? So we have done the binding assay. We have done an in vitro assay. It is highly suggestive. But at this point, we are still not sure whether it is an inhibitor within the scope of Claim 1. So what else do we do to tell us whether it is an inhibitor within the scope of Claim 1?

**A I mean, I think people would approach it in a variety of directions. I wouldn't say there is an absolute standard.**

Q Okay. Are there -- do you have any examples of things that you would need to do in a particular circumstance to be able to tell whether that compound that blocks the binding, inhibits the

proliferation, whether that is an IL-15 inhibitor?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: I mean, not one specific example that comes to the top of the list of possibilities.

BY MR. MILLS:

Q Are there any examples that are in your mind right now? I understand that we don't always think of everything. But as you sit here today, is there anything in your mind for the next step as to what you would do that would allow you to conclusively determine whether the compound is an inhibitor of IL-15 or the IL-15 receptor?

MR. FELDSTEIN: Same objections.

THE WITNESS: Again, I could think of things that we could do, but I can't name one thing that is absolutely missing.

BY MR. MILLS:

Q So what is it that you can think of?

**A Examples of what one could do. It could be looking at phosphorylation of JAK or STAT proteins. Other known biologic effects of IL-15. And those are just examples.**

Q So what other known biological effects of IL-15 would you look at?

**A It would probably depend on the -- the system and the example -- sorry. Are we -- we are not still on the CTLL-2 cells? What are we in?**

Q Well, you wanted a less specific cell line, but it is an IL-15 receptor expressing cell. In vitro study. So we did the binding study. The binding study says it binds -- the binding study tells us that what we are administering blocks the binding of IL-15 to its receptor.

The proliferation study tells us that the IL-15-induced proliferation went down, but still not conclusive. So you said, well, we can look and see if phosphorylation is decreased. And if the phosphorylation is decreased, then we might infer that the IL-15 is being inhibited.

Is that what you are saying?

MR. FELDSTEIN: Object to form.

THE WITNESS: That would be one way to, yeah, provide additional data.

BY MR. MILLS:

Q Is it common for you to perform that type of phosphorylation study that you were describing?

**A In tissue, yes.**

Q So other than looking at phosphorylation, is there anything else that you could do to definitively answer the question about whether the compound is an IL-15 inhibitor?

MR. FELDSTEIN: Object to form. Beyond the scope.

THE WITNESS: There is nothing specific to add at this time.

BY MR. MILLS:

Q Okay. What about a scenario where I have an antibody to CD122, for instance, but it is a polyclonal antibody? Does the fact that I have a polyclonal antibody to CD122 tell me that that is an inhibitor of IL-15, just that fact alone?

**A Yes.**

Q What -- what is a polyclonal antibody?

**A Clone refers to an antibody that has the exact same sequence. So polyclonal antibodies have antibodies of more than one sequence that are thought to all bind the same target.**

Q Is that in juxtaposition to a monoclonal antibody?

**A A monoclonal antibody is one clone. So one sequence. One clone.**

Q So a monoclonal antibody is specific to

the thing that it is targeting. Is that correct?
MR. FELDSTEIN: Object to form.
THE WITNESS: They both are considered specific.
BY MR. MILLS:
Q Okay. So you are saying but the polyclonal antibody, it has multiple different sequences that can try and bind to that. Is that correct?
MR. FELDSTEIN: Object to form.
THE WITNESS: Yeah, it is different antibody clones that may bind in different places.
BY MR. MILLS:
Q Okay. Without performing a binding assay, do we know that a polyclonal antibody necessarily -- for CD122 necessarily blocks the binding of IL-15 to CD122?
**A We rely on prior literature.**
Q When you say that, what do you mean? Does the prior literature say all polyclonal antibodies to CD122 block binding of IL-15 to CD122?
**A Well, I mean, polyclonal antibodies usually refers to one group of clones. So I mean, you look back to the extent to which that was**

**thought to inhibit IL-15, whether it is in the literature or patent or -- yeah.**

Q So you are saying if a polyclonal antibody is taught in the literature to inhibit IL-15, then you might conclude based on that that it inhibits IL-15? Is that what you're saying?

**A You may conclude that.**

Q But is there something about it being polyclonal that tells us it necessarily inhibits binding of IL-15 to CD122?

MR. FELDSTEIN: Object to form.

THE WITNESS: And the understanding would be that it binds to it, yeah.

BY MR. MILLS:

Q So is blocking the only function that antibodies -- let me withdraw that question and ask another question.

Are you familiar with antibodies that are used to identify something?

**A Yes.**

Q So can a monoclonal antibody be used in a nonblocking epitope to identify the presence of its target?

**A It would depend on the specific example. Often, these are used in tissue that has already**

**been fixed. Your question, is it possible that something -- sorry. Say it again, binds to --**

Q So if I tell you I used a monoclonal antibody to identify that there is CD122 present on the cell, does that necessarily mean that that is an inhibitor of IL-15 or the IL-15 receptor?

MR. FELDSTEIN: Object to form.

THE WITNESS: I would just say it could inhibit. It would depend on the antibody.

BY MR. MILLS:

Q So it is true that it could inhibit or not inhibit, we -- we don't know simply based on the fact that it is a CD122 antibody. Correct?

**A We'd have to rely on what was known about it, yeah, to make that conclusion.**

Q So I guess what I am trying to get at is just because something is an antibody to something doesn't necessarily tell you where it binds and what it blocks. Is that fair?

**A What it binds and what it blocks -- or where it binds and what it blocks.**

**Yes. I mean, I think if something is an antibody to something, you can assume that it binds to it and it may inhibit it.**

Q But you can't just assume it inhibits it. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: I mean, usually when these things are -- when antibodies are made, there is some level of characterization of them, and often you have literature or other means to evaluate what is known about them. But just -- yeah. Yeah.

BY MR. MILLS:

Q We were talking earlier about the association of IL-15 with the IL-15R alpha --

**A Uh-huh.**

Q -- in the endoplastic reticulum in the cell.

Do you recall that?

**A I do.**

Q So if I were trying to confirm that that is where that happens, that it is in the ER that they associate, could I do that by using a antibody to IL-15R alpha that is a nonblocking antibody but which is also trackable, you know, has a fluorophore on it or something that allows me to watch where it goes so that I know that it will

bind the alpha but it is not going to get in the way of alpha and 15 binding because I want to watch them associate and I want to watch them get expressed in the cell?

MR. FELDSTEIN: Object to form.

THE WITNESS: Let me make sure I understand. So your tracker would bind IL-15 alpha on the surface on the cell and then go back into the ER? How did it get into the cell?

BY MR. MILLS:

Q No. Well, so, do -- do antibodies not get into the cell?

MR. FELDSTEIN: Object to form.

THE WITNESS: When there are specific mechanisms by which antibodies can go into cells.

BY MR. MILLS:

Q Okay. Do you know what those are called?

**A Endocytosis.**

Q Okay. So if I administer an antibody. It has a tracker on it.

**A Yeah.**

Q And you are saying it is going to get endocytosed into the cell. It is going to bind to

alpha. But because of where I have targeted it, because the epitope, it is not interfering with alpha binding the 15? That is a scenario you can understand. Right?

MR. FELDSTEIN: Object to form.

THE WITNESS: Sorry. So the antibody is binding to the IL-15 cytokine, not the receptor?

BY MR. MILLS:

Q Well, in my scenario, it was binding to alpha.

**A Okay. Binding to alpha. Conceivably, it could be endocytosed into the cell and then you would be able to watch it.**

Q Right.

**A Uh-huh.**

Q So in that case, that is a nonblocking antibody to IL-15R alpha that specifically binds alpha, but does not block alpha's interaction with 15?

**A Sorry. How are you visualizing the cytokine in this experiment? How do you know it is not binding?**

Q Yeah, so I guess we need an antibody on each one. Is that what you're saying?

**A Yes.**

Q Okay. Let's assume we have an antibody on each one. Neither one is blocking, you know, and, you know, we are able to follow the two different colors and it is very beautiful. Right? That is a scenario you can comprehend, you can understand? Correct?

**A Yes. But the antibodies -- two different antibodies on the alpha and the cytokine could be what is preventing them from binding.**

Q Okay. And whether or not the antibodies prevent the binding or not depends on the epitope where the antibodies bind. Correct?

**A In general, yes.**

Q Okay. So sometimes the antibody that binds to the molecule blocks the interaction, sometimes it doesn't. Correct?

MR. FELDSTEIN: Object to form. Beyond the scope.

THE WITNESS: There may be examples where it doesn't block signaling.

BY MR. MILLS:

Q Is it -- is it an easy thing for the antibody to get in the cell?

**A I don't know how you define easy. I am**

**not sure.**

Q Well, I guess let me say it this way. If I were administering an antibody to IL-15 alpha, is that antibody going to be -- have an easier time to getting to the alpha that is expressed on the outside of the cell than it is to the alpha that's within the cell?

**A Yes, I think that would be fair to say.**

Q What percentage of that antibody is going to get inside the cell?

MR. FELDSTEIN: Object to form.

THE WITNESS: I would have to review the literature.

BY MR. MILLS:

Q Now, I am going to ask you a question specifically about an antibody when it targets the area where IL-15 and alpha -- IL-15 alpha interact.

**A Okay.**

Q Whether it is on the 15 or whether it is on the alpha. Okay?

**A Okay.**

Q If that -- and I guess whether it is an antibody or a small molecule or a peptide, that is its target.

**A Okay.**

Q If the alpha and IL-15 are already expressed on the cell in a complex, the binding target for that compound is not accessible to the compound because the IL-15 and the alpha are already associated together. Correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: It is not as simple as that. I mean, things don't bind forever. There is always an on-off rate. And then it comes down to the binding kinetics and things like KD. So I think it is hard to just provide a blanket answer.

BY MR. MILLS:

Q So at least while the complex is still formed, this targeted site of that compound that we have administered is not going to be accessible to the compound during that period of complexation. Is that correct?

MR. FELDSTEIN: Object to form.

THE WITNESS: Maybe for that one specific IL-15, IL-15 receptor interaction. But I imagine that there may be other ones where it is not bound and it could still inhibit IL-15 sigma. I think it is more coming to it -- or like the

magnitude, the inhibition in that scenario.

BY MR. MILLS:

Q When you say it is not bound, you mean that the IL-15 has disassociated from the alpha that is expressed on the cell surface. Is that correct?

**A That could be the case.**

Q When you were referring to on-off rate, is there something else that you had in mind other than the IL-15 disassociating from the alpha?

**A No, not particularly.**

Q So the IL-15 disassociates from the alpha and it is now soluble IL-15 that is floating in solution around the cell. Is that correct?

**A In this hypothetical scenario, that would be the other alternative.**

Q And I mean -- and to be clear, this is -- this is the only way for an IL-15 or IL-15R alpha inhibitor to get at the location of IL-15 and alpha where those two interact with each other, is if the IL-15 is disassociated?

MR. FELDSTEIN: Object to form.

THE WITNESS: An antibody could bind somewhere else on an alpha that might

impact its association with beta gamma.
BY MR. MILLS:
Q So it is your understanding that the alpha receptor subunit interacts with the beta and gamma receptor subunits?
**A In transpresentation.**
Q So when we are talking about transpresentation, if we are using a molecule to try and interfere with the transpresentation, one way we could do that is by blocking the interaction of the alpha with beta gamma. Is that correct?
**A Yeah.**
Q Does alpha interact with both beta and gamma or just one of them?
**A I mean, all -- all of the receptors are required for the -- the high-affinity signaling.**
Q So my question is about the interaction. You said that the alpha is interacting with the beta gamma receptor on the other cell. So is it -- is alpha physically interacting with both beta and gamma or just one or [sic] the two?
MR. FELDSTEIN: Object to form.
THE WITNESS: I would have to refer to the crystal structures of the -- the complex.

BY MR. MILLS:

Q So not being sure right now whether alpha interacts with both alpha and gamma, let's assume for the moment that it interacts with both of them.

In the scenario where alpha interacts with both of them, and I use a compound to prevent alpha from fully interacting with just beta, but the interaction with gamma is just as it is supposed to be. In that scenario, is it conceivable that I have interrupted the JAK1 signaling but not the JAK3 signaling?

MR. FELDSTEIN: Object to norm. Beyond the scope.

THE WITNESS: Sorry. I lost you there. Can you say it again.

BY MR. MILLS:

Q Okay. So we are assuming at this point that the alpha interacts with both beta and gamma?

**A Yes.**

Q And we have a molecule that prevents alpha from binding to beta, but the binding to gamma still happened exactly the way it is supposed to.

**A Understood.**

Q So in that scenario, gamma is signaling, but beta is not signaling. Correct?

MR. FELDSTEIN: Object to form.
THE WITNESS: I think it would depend on the specific molecule.
BY MR. MILLS:
Q So you are saying some inhibitors might do that and some might not?
MR. FELDSTEIN: Object to form.
BY MR. MILLS:
Q Is that what you are saying?
MR. FELDSTEIN: Object to form.
THE WITNESS: I mean, it would inhibit the pathway -- or inhibit IL-15 signaling.
BY MR. MILLS:
Q That is my next question. So I just want to make sure that we understand the scenario.
So in this scenario I have a compound, maybe it is a skinny compound. It is binding the alpha, but it is binding the alpha in such a way that beta never gets activated, but gamma does. In that scenario, I have JAK3 signaling, but I don't have JAK1 signaling. Is that correct?
MR. FELDSTEIN: Object to form. Beyond the scope.
THE WITNESS: I mean, I am not sure

if such a molecule exists.
BY MR. MILLS:
Q I understand that. That is why -- you know, we are talking about the hypothetical.
Do you understand the hypothetical?
**A Yes.**
Q So in that hypothetical where alpha is prevented from binding to beta, but everything still binds to gamma the way it is supposed to. In that scenario, you would have JAK3 signaling, but not JAK1 signaling. Correct?
MR. FELDSTEIN: Object to form. Beyond the scope.
THE WITNESS: I think that would be one scenario.
BY MR. MILLS:
Q Now I just want to check the opposite scenario. So it is on alpha still and it is interfering with the gamma -- the interaction with gamma.
**A Yeah.**
Q But the interaction with beta is still happening. In that scenario, I have JAK1 signaling, but I don't have JAK3 signaling. Correct?

MR. FELDSTEIN: Object to form. Beyond the scope.

THE WITNESS: I think that would be one possibility.

BY MR. MILLS:

Q And the same would be true if my molecule instead of interacting with the alpha was interacting with the 15. Right? It was selectively interfering with IL-15's binding with beta or gamma, but not both of them at the same time?

**A So we are inhibiting binding of cytokine 15 to alpha receptor. That is correct?**

Q In this scenario, instead of the inhibitor interacting with alpha, it is interacting with 15.

**A Yep.**

Q And to be specific, it is interacting with 15 and beta. So it is preventing 15 from binding to beta.

**A Okay.**

Q But it is not preventing 15 from binding to gamma. So in that scenario, because 15 is binding to gamma we are still getting JAK3 signaling, correct, but not JAK1?

MR. FELDSTEIN: Object to form.

Beyond the scope.

THE WITNESS: Yeah, and I think that that would be one possible prediction, but I think we would still be inhibiting IL-15 activity.

BY MR. MILLS:

Q Okay. So if -- you are saying even if all we are doing is -- right. Okay.

So do you know whether IL-15 binding to just the beta receptor stimulates sufficient JAK1 signaling to support the homeostasis of T cells?

MR. FELDSTEIN: Object to form.

Beyond the scope.

THE WITNESS: Is this in a specific context?

BY MR. MILLS:

Q Well, under any context. Are you aware -- let me ask the question this way. Prior to signing your declaration, did you investigate whether IL-15 binding to just the beta receptor signaled sufficiently to support the homeostasis of T cells?

MR. FELDSTEIN: Object to form.

Beyond the scope.

THE WITNESS: I mean, to the extent that the T-cell relied on IL-15 signaling

for its survival -- I mean, I am not sure what level of JAK1 is required for its cell survival in this scenario.

BY MR. MILLS:

Q Let's start with -- when we are talking about a T-cell, what is the difference between homeostasis and proliferation?

**A Generally, in homeostasis proliferation rates are low.**

Q Okay. Is it fair to say that in homeostasis, proliferation is about at the rate at which the T cells are dying so that your population stays roughly the same?

**A Yeah, I think it is reasonable.**

Q There is another word that is used, IL-15 supports the maintenance of CD8 positive T cells. Is that a statement that you have heard before?

**A Yes.**

Q Do you agree with that statement?

**A In that context, it does, yes.**

Q And you agree that before critical date in April 2017, a person of ordinary skill in the art was aware that IL-15 supports the maintenance of CD8 positive T cells. Correct?

**A In some examples, but not in vitiligo.**

Q Before you signed your declaration, did you investigate whether T cells that express the CD122 beta receptor, but not the gamma receptor, are maintained in homeostasis by administration of IL-15?

MR. FELDSTEIN: Object to form.

THE WITNESS: I would have to review the literature to answer that question.

BY MR. MILLS:

Q So I asked you whether you investigated that prior to signing your declaration. You are saying you would have to review the literature to answer the question. So I just want to make sure that we are getting an answer together.

It is not something you investigated before, and in order to answer the question, you would have to review the literature. Is that correct?

MR. FELDSTEIN: Object to the form.

THE WITNESS: Is this related specifically to something that I said in the declaration?

BY MR. MILLS:

Q I think it relates to a lot of things you said in the declaration. But I am just trying to

find out if that is something that you investigated before you signed your declaration?

**A So IL-15 beta, AKA CD122, only on T cells?**

Q Yes.

**A And not gamma?**

Q Exactly.

**A It is not my understanding that that is a common mode of signaling.**

Q Did you investigate before you signed your declaration whether there was any literature teaching that IL-15, on administration to T cells that express just beta but not gamma, was sufficient to maintain the homeostasis of those cells?

MR. FELDSTEIN: Object to form.

THE WITNESS: I don't recall.

BY MR. MILLS:

Q You don't recall investigating that. Is that correct?

**A I don't recall whether or not I did.**

**(Recess taken from 3:30 p.m. to 3:38 p.m.)**

BY MR. MILLS:

Q So before the break, we were talking about the interaction of different subunits of the IL-15

receptor with IL-15. And so I just want to summarize.

I think we have talked about several different ways that you could block the interaction of IL-15 with its receptor. So one of those that we mentioned is you said you could block the interaction of the alpha subunit with the beta subunit.

Do you recall that?

**A Yes.**

Q And that is encompassed within Claim 1. Correct?

**A Yes.**

Q We also discussed a second one that is blocking the interaction of alpha with gamma. Correct?

**A Yes.**

Q That is also encompassed within Claim 1?

**A Yes.**

Q A third type of inhibition is that you could block the interaction of beta with gamma. Correct?

**A Yes.**

Q A fourth type of inhibition is that you could block the interaction of IL-15 with alpha.

Correct?

**A IL-15 cytokine with alpha receptor, yes.**

Q A fifth type of inhibition is that you could block the interaction of IL-15 with beta. Correct?

**A Yes.**

Q And I think actually I listed six so far. Okay. A seventh type of inhibition is that you could block the interaction of IL-15 with both beta and gamma at the same time. Correct?

**A Yes.**

Q And then an eighth type of inhibition that is encompassed within the scope of Claim 1 is that rather than blocking interaction physically, we are just reducing the amount of IL-15 by, for instance, using a nucleotide inhibitor. Correct?

**A Yes.**

Q So that is nine.

Ten would be that instead of reducing the IL-15, we use a nucleotide inhibitor to reduce or completely get rid of the expression of the beta receptor. Is that correct?

**A That would be another way, yes.**

Q So that is 11.

Number 12, we could use a nucleotide

inhibitor to get rid of the gamma receptor. Correct?

**A Yes.**

Q And my counting may be all wrong, but I think we have gotten to 13.

And 13 is we get rid of the alpha receptor. Correct?

**A That would be another way.**

Q Are you familiar with experiments in CD132 knockout mice?

**A Yeah. Broadly speaking, yes.**

Q And CD132 knockout mice is a mouse that doesn't express the gamma receptor. Correct?

**A Correct, gamma subunit, yes, it does not express that.**

Q We talked before about how the gamma subunit is part of six different interleukin pathways. Correct?

**A Six different cytokines.**

Q Yes.

**A Same pathway, similar.**

Q So when you get rid of the gamma receptor from an organism, it causes severe immunosufficiency. Correct?

**A When it is entirely absent, yes.**

Q Thank you.

The claim that is talking about administering the inhibitor to a subject, that includes a subject with segmental vitiligo. Correct?

**A Yes.**

Q It also includes a subject with chemically-induced vitiligo. Correct?

**A Yes. But just recognizing that chemically-induced vitiligo -- actually, just yes. The answer is yes.**

Q Claim 1 also encompasses administering inhibitor to a subject who has oxidative stress-induced vitiligo. Correct?

**A Recognizing that I don't think that is a subtype of vitiligo. If the subject has vitiligo, yes.**

Q Let me ask the question this way. As far as you understand it today, the model for oxidative stress induction of vitiligo, inhibition of IL-15 will not remove that oxidative stress. Is that correct?

**A I am not sure. Inflammation can create oxidative stress. I would have to review the specific example that you are referring to.**

Q Do you know a Dr. Seemal, S-E-E-M-A-L, Desai, D-E-S-A-I?

**A Yes, I know who he is.**

Q You gave a DermView series of presentations for the Dermatology Times with Dr. Desai. Correct?

**A Yes, I think so.**

Q Have you given multiple DermView interviews for the Dermatology Times?

**A I don't remember.**

Q Let's talk a little bit about the '505 patent.

So in your declaration, you talk about that there are five or six -- I think you called them working examples, but experiments of some kind in the '505 patent. Correct?

**A Yes.**

Q And you provided a variety of testimony about the import of the different experiments. But I just want to make sure that we are all in agreement about which examples included the use of IL-15 or IL-15 receptor inhibitor. So I don't think this is controversial. I just want to make sure that we agree.

So there are some different experiments

where they are looking at cytokines and the fluid, et cetera. But the only place where they actually administer what they say is an inhibitor of IL-15 or the IL-15 receptor is when they administer the ChMBC7 antibody in Example 5. Is that correct?

**A Yes, but there are multiple experiments with that antibody.**

Q So in the experiments where they administer an IL-15 or IL-15R receptor in the '505 patent, they are always using the ChMBC7 antibody. Correct?

**A Yes.**

Q And that is a chimeric rat/mouse antibody with diminished Fc-mediated effector functions. Correct?

**A I am sorry, where are you reading from?**

Q 33, 22 through 23.

**A ChMBC7 is chimeric rat/mouse antibody with diminished Fc-mediated effector functions.**

Q And I understand that you have offered a testimony that you don't think this information is necessary, but I just want to make sure that we have an agreement upon the facts about what is in here or not.

So you agree that the '505 patent doesn't

tell us the sequence of the ChMBC7 antibody. Correct?

**A Yes, correct.**

Q And you haven't identified any document incorporated by reference in the '505 patent that -- that you think provides that sequence. Correct?

**A Not the specific sequence, but it was known to inhibit IL-15 signaling.**

Q So my question is just about the sequence. So let's just -- we'll do baby steps. Okay.

So you performed your analysis for your declaration. You reviewed -- we have hundreds of exhibits now on the table. It is quite impressive. And not a single one of those do you identify anywhere the primary sequence of ChMBC7 being disclosed in the '505 patent. Correct?

**A No. But I am not sure it is necessary to interpret the experiments that are done.**

Q I understand that is your position. I just want to make sure that we have a very clear record about what is disclosed and what is not.

And your testimony is in the declaration. It is in the record. The board is well aware of what you say. I just want to make sure we have a very clear yes or no or words to that effect.

In the '505 patent as well as in any of the documents incorporated by reference, you haven't pointed to anything giving us the primary sequence for the ChMBC7 antibody. Right?

MR. FELDSTEIN: You are not obliged to answer yes or no, no matter what counsel tells you. Answer how you see appropriate for the question.

MR. MILLS: I object to the speaking objection.

MR. FELDSTEIN: It is not an objection.

MR. MILLS: Then you shouldn't be speaking.

MR. FELDSTEIN: You shouldn't be misleading the witness.

MR. MILLS: I am not misleading the witness. If you are going to continue arguing, then we are going to be here all night.

BY MR. MILLS:

Q Would you like me to repeat the question?

**A Sure.**

Q In the '505 patent, as well as the documents incorporated by your reference, you

haven't pointed to anything disclosing the primary sequence for the ChMBC7 antibody. Correct?

MR. FELDSTEIN: Object to form. Asked and answered.

THE WITNESS: I would answer the same as I did last time. No, but I don't need to know it to answer the question -- or to validate the result.

BY MR. MILLS:

Q So I object to the latter part of your question [sic] as nonresponsive.

My question is very clear about what I am asking for. I am not asking for whether you think it is necessary. I am asking for whether it was disclosed. I am going to try it one more time.

In the '505 patent, as well as the documents recorded by reference, you haven't pointed to anything disclosing that primary sequence for the ChMBC7 antibody. Correct?

MR. FELDSTEIN: Same objections.

THE WITNESS: No.

BY MR. MILLS:

Q No, it is not correct or it is correct?

MR. FELDSTEIN: Same objections.

THE WITNESS: Sorry. Can you repeat

the question, then I can answer yes or no accurately.

BY MR. MILLS:

Q In the '505 patent, as well as the documents incorporated by reference, you haven't pointed to anything disclosing the primary sequence for the ChMBC7 antibody. Correct?

MR. FELDSTEIN: Same objections.

THE WITNESS: I don't think so. I can't exactly remember.

BY MR. MILLS:

Q So you don't think that is correct or you don't think it discloses the primary sequence?

MR. FELDSTEIN: Same objections.

BY MR. MILLS:

Q Let me ask it this way. Let me see if I can help.

Sitting here today, you can't point to anything in the '505 patent, or any of the documents incorporated therein by reference, disclosing the primary sequence of the ChMBC7 antibody. Correct?

**A I can't remember if derivatives of that antibody were made that may have disclosed the sequence. To answer your question, no, I can't**

**point to anything specific without going through everything.**

Q Same question for the secondary structure. Is your answer the same?

**A Yes.**

Q Now, the question is about the epitope that ChMBC7 binds. Is the answer the same?

**A I am aware that ChMBC7 binds to the same epitope as TM-beta 1, which is another commonly used CD122 antibody.**

Q Does the '505 patent disclose the epitope that ChMBC7 binds to?

**A No.**

Q Does the '505 patent disclose that ChMBC7 binds to the same epitope as TM-beta 1?

**A No.**

Q TM-beta 1 is the CD122 antibody that was used in the Xing paper. Correct?

**A Yes.**

Q So it is your opinion that TM-beta 1 as used in Xing binds to the same epitope as CD122 as ChMBC7. Correct?

**A I don't think the Xing article expressed -- evaluated that issue specifically.**

Q So you are saying people didn't know that,

but now you know that?

**A Yes.**

Q So it is your opinion that if the TM-beta 1 antibody from the Xing reference was administered to the Harris mice in the Harris reference, that it would have the same effect on the vitiligo that was observed with the ChMBC7 antibody. Correct?

**A To the extent that it inhibited IL-15, which I would expect it to.**

Q You agree you can't point to anything before the critical date of April 24th, 2017, disclosing that TM-beta 1 and ChMBC7 bind to the same epitope. Correct?

**A I would have to double-check the data of the reference I have in mind.**

Q Is it a reference that is in your declaration?

**A I don't think so.**

Q Okay. It is your opinion that any inhibitor of IL-15 or the IL-15 receptor will work to treat vitiligo. Is that correct?

**A Yes, recognizing that medications vary in efficacy, safety. But to the extent it inhibits IL-15, it should treat vitiligo.**

Q Dr. Damsky, the DermView interview that we were discussing with Dr. Desai, do you recall that taking place in the fall of 2021?

**A I don't remember when it happened.**

Q Do you recall telling Dr. Desai in your DermView interview on December 14th, 2021 that, quote, there is a proof of concept study that is underway now looking at blockade of IL-15 in patients with vitiligo, and we have all got our fingers crossed that it is going to work?

MR. FELDSTEIN: Object to form and foundation.

THE WITNESS: I don't remember making that exact statement.

BY MR. MILLS:

Q Okay. I am showing you a webpage.

MR. FELDSTEIN: I am going to object to using a document without marking it as an exhibit, without sending copies of it to review.

MR. MILLS: So this is for purposes of impeachment.

MR. FELDSTEIN: I am still objecting.

BY MR. MILLS:

Q I am showing you a webpage. You see that

the website says DermatologyTimes.com?
MR. FELDSTEIN: Objection.
THE WITNESS: Yes.
BY MR. MILLS:
Q And it has a title that says DermView, Innovations in the Treatment of Vitiligo?
MR. FELDSTEIN: Object to form. And I would object to the use of the webpage again.
MR. MILLS: You can have a standing objection to the webpage.
BY MR. MILLS:
Q Do you see it says DermView, Innovation in the Treatment of Vitiligo?
**A Yes.**
MR. FELDSTEIN: Objection. Foundation.
BY MR. MILLS:
Q You see it says Episode 8?
MR. FELDSTEIN: Objection. Foundation.
THE WITNESS: Yes.
BY MR. MILLS:
Q It says December 14, 2021.
MR. FELDSTEIN: Objection.

Foundation.
THE WITNESS: Yes.
BY MR. MILLS:
Q It lists you and Dr. Desai. Correct?
MR. FELDSTEIN: Objection.
Foundation.
THE WITNESS: Yes.
BY MR. MILLS:
Q Do you recognize yourself on the screen there?
MR. FELDSTEIN: Objection.
THE WITNESS: Yes.
BY MR. MILLS:
Q The time stamp is one minute, 15 seconds. Correct?
MR. FELDSTEIN: Objection.
Foundation.
THE WITNESS: Yes.
BY MR. MILLS:
Q I am going to go ahead and play the video.
(Video played as follows:)
DR. DAMSKY: There is a proof of concept study that is underway now looking at IL-15 blockade in patients with vitiligo. And we have all got our fingers

crossed that it is going to work.
BY MR. MILLS:
Q Do you dispute that you said those words on December 14th, 2021?
MR. FELDSTEIN: Objection. Foundation.
THE WITNESS: No, but I would clarify that what I would have meant is that -- not that I wouldn't expect it to treat vitiligo, but there would be, you know, an appropriate balance of safety and efficacy with the drug.
BY MR. MILLS:
Q In that same interview, do you recall saying, One can conceive that if you were able to turn off that memory response, that you maybe not only would be looking at treatment for vitiligo, but maybe looking at long-lasting treatment?
**A I would have to review what you have got.**
**(Video played as follows:)**
DR. DAMSKY: The point about IL-15 and memory I think is an interesting one, because one can conceive of if you were able to turn off that memory response, that you may not be only looking at

treatment for vitiligo, but you -- maybe you're looking at long-lasting treatment.

BY MR. MILLS:

Q So do you dispute that you said those words to Dr. Desai on December 14th, 2021?

MR. FELDSTEIN: Objection. Foundation.

THE WITNESS: If that is the date. I can't see it. No. No.

BY MR. MILLS:

Q Thank you.

Dr. Damsky, can you tell by looking at a molecule whether it is an IL-15 inhibitor?

**A When you say look at it, you are referring to the chemical structure?**

Q Right.

**A No.**

Q Before the critical date in 2017, would a person of ordinary skill in the art have been able to identify an IL-15 inhibitor simply by looking at the structure?

**A A pharmaceutical scientist might be able to. I think usually they would probably take additional context than just the structure itself.**

Q Let's go ahead and look at the appendix to

your declaration.

In your appendix, you cite what you say are 450 IL-15 or IL-15 receptor inhibitors. Is that correct?

**A I don't think that was the number that I used.**

MR. FELDSTEIN: Is there a question pending?

MR. MILLS: I think he is looking at the appendix.

THE WITNESS: Did you want the number we did use?

BY MR. MILLS:

Q Sure.

**A I believe it was 375.**

Q So in your appendix you list 375 compounds that you believe are inhibitors of IL-15 for the IL-15 receptor. Correct?

**A Yeah, about 375.**

Q How did your Appendix A come to exist?

**A I would say Appendix A reflects my opinion, and I directed counsel as to assembling it.**

Q Would it be fair to say that you requested a collation of compounds and then you reviewed that

collation and approved it?

**A I guess you could use those words. I would say that we collaborated to identify the references within specific parameters, and I reviewed everything.**

Q Okay. So in your declaration, there is a spot where you discuss the number of different kinds of inhibitors.

**A Are you referring to the graphs?**

Q No. I think there is a place where you give us a specific number, but let me see if I can find it. It is difficult for one person to keep all of the materials here in their head at one moment.

So I am giving you -- these are premarked exhibits. I am giving you Exhibit 2013.

**A Okay.**

Q Also giving you Exhibit 2014.

**A Should I write the numbers on them so you keep track? Oh, no, they're on the bottom. Sorry.**

Q I'm also giving you Exhibit 2015.

**A Thank you.**

Q Thank you. And Exhibit 2024.

I believe those are the five references in your chart that you say discuss small molecule

inhibitors of IL-15 or the IL-15 receptor.

So my first question is: Can you take the time to look at your chart and let me know if I missed any. Are there more references than those five?

**A And you are interested in small molecule inhibitors?**

Q Yes.

**A 2025 is relevant as well.**

**What does it say for 2025 in your description?**

**A Inhibitor type, is that what you are referring?**

Q Right.

**A Small molecule.**

Q So you are saying 2025?

**A Yes.**

Q I thought I gave you 2025.

MR. FELDSTEIN: You gave 2013, 2014, 2015 and 2024.

MR. MILLS: Thank you.

THE WITNESS: Do you want me to keep looking?

BY MR. MILLS:

Q Yes.

**A All right. I think that's it.**

Q So the 2025 in your appendix, you say there is one inhibitor entry for Exhibit 2025. Correct?

**A Sorry. Did I get 2025?**

Q Right now, I am just asking about what the appendix says.

**A Okay. Fair enough.**

Q I am now handing you 2025.

**A Thank you.**

Q I didn't mean to keep it from you. It just got lost in the morass of papers.

**A Okay. So then going back to the question on 2025. Can you just restate the question.**

Q In your appendix, you identify -- you have one entry for one inhibitor in Exhibit 2025. Correct?

**A Yes.**

Q And Exhibit 2025 is not an exhibit that was incorporated by reference into the '505 patent. Is that correct?

**A I have to double-check. I don't see it.**

Q Okay. So now I am going to ask you about Exhibit 2024. I guess let's start with the incorporation question.

You agree that Exhibit 2024 is not incorporated by reference into the '505 patent. Correct?

**A 2024. It does not appear to be, no.**

Q In your appendix, you identify Exhibit 2024 as providing between 40 and 50 of your 61 examples of small molecule inhibitors. Correct?

**A Sorry, which page of the appendix?**

Q Pages 4 through 10 of the appendix.

**A Thank you. Do you want me to count them?**

Q Yes, please.

**A I am getting 48.**

Q That is what I have.

Okay. So for the five small molecule references that are in your appendix, you agree that for Exhibits 2024 and 2025 together, that provides 49 of your small molecule inhibitor examples, none of which are incorporated by reference into the '505 patent. Correct?

**A Yeah, that seems correct.**

Q Let's take a look at Exhibit 2013.

**A Okay.**

Q So we will see if we can do this without giving the court reporter a heart attack.

Exhibit 2013, 2014 and 2015 --

**A Uh-huh.**

Q -- all have the same applicant. Do you agree?

**A There are 10 names. It will take me a little time to check them all.**

Q If there are 10 names, I think you are looking at the inventors. It is okay to look at that. I just want us to be clear what we are looking at. Go ahead and finish looking at the inventors. That was going to be my next question.

**A Applicant appears the same, to answer the first question. Inventors appear the same.**

Q That is across the three different references. Correct?

**A Yes.**

Q I won't torture you by asking you to pronounce the names of any of those people or the applicant. Okay.

So in reference to 2013, 2014, and 2015, you agree that these exhibits identify the compounds listed therein as inhibitors of IL-15 based on in vitro proliferation assays. Correct?

**A Let me just review them.**

Q I can try and help you maybe look at column -- or page 6. Let's see.

MR. FELDSTEIN: What exhibit are you --

BY MR. MILLS:

Q So this is in Exhibit 2013. Let's look at page 6, lines 7 through 10.

**A Yes, I see that.**

Q Here, they are doing in vitro proliferation assays with PBMC cells. Correct? Take a look at page 12, starting on line 17.

**A Yes, I see they studied PBMCs.**

Q What are PBMCs?

**A Peripheral blood mononuclear cells.**

Q So are PBMCs the same thing as CD8 positive T cells?

**A They would include CD8 positive T cells.**

Q PBMCs are a mixture of cells. Is that correct?

**A Yes.**

Q What would be the proportion of CD8 positive T cells in the PBMCs used in Exhibit 2013?

**A I don't know off the top of my head.**

Q Is it your opinion that the proliferation of the group of PBMC cells as a whole is reliably predictive of the proliferation of CD8 positive T cells in response to IL-15?

MR. FELDSTEIN: Object to form.
THE WITNESS: It could be.
BY MR. MILLS:
Q When you say it could be, that means it may be and it may not be?
MR. FELDSTEIN: Object to form.
THE WITNESS: I would say it might be reflective.
BY MR. MILLS:
Q You think it might be or it might not be?
**A Yeah.**
Q Okay. Looking at page 12 through 13, and also 14. On page 14, they give amounts of proliferation existing after the inhibition for the compounds listed on 12 and 13. Correct?
**A Yes.**
Q For compound 9, the proliferation went down from 100 percent to 71 percent. Correct?
**A Yes.**
Q That is a 29 percent inhibition?
**A Yeah, proliferation.**
Q For compound R12, the proliferation went from 100 percent to 60 percent. Correct?
**A Yes.**
Q That is a 40 percent inhibition?

**A Yes.**

Q For compound R10, the proliferation went from 100 percent to 34 percent. Correct?

**A Yes.**

Q That is a 66 percent inhibition of proliferation?

**A Yeah, roughly.**

Q Now, looking at the claims of the '505 patent, is there a minimum threshold of proliferation inhibition that is required to satisfy the limitation of being an IL-15 or IL-15 receptor inhibitor?

MR. FELDSTEIN: Object to form. Calls for legal conclusion.

THE WITNESS: I am not aware of a standardly accepted threshold.

BY MR. MILLS:

Q So the claims that the patent encompass compound inhibits IL-15-induced proliferation by as little as 10 percent?

MR. FELDSTEIN: Objection. Calls for legal conclusion.

BY MR. MILLS:

Q The claims of the '505 patent encompass the administration of a compound that inhibits

IL-15 proliferation by as little as 10 percent. Correct?

MR. FELDSTEIN: Same objections.

THE WITNESS: Yes, it could.

BY MR. MILLS:

Q Same question for a compound that inhibits IL-15-induced proliferation by as little as 5 percent?

MR. FELDSTEIN: Same objections.

THE WITNESS: Yeah, I think it could. It might have -- it might vary in its sort of magnitude of inhibition.

BY MR. MILLS:

Q The claims of the '505 patent encompass the administration of a compound that -- that inhibits IL-15-induced proliferation by as little as 1 percent?

MR. FELDSTEIN: Objection to form. Calls for legal conclusion.

THE WITNESS: If it was statistically significant, I suppose.

BY MR. MILLS:

Q When we are evaluating what is within the scope of the claims of the '505 patent, is it sufficient that we do a proliferation assay as in

Exhibit 2013 using PBMC cells as a whole or does our assay need to focus exclusively on CD8 positive T cells?

MR. FELDSTEIN: Object to form. Calls for legal conclusion.

THE WITNESS: I think really the point is to try to take the field as a whole as opposed to one result from one inhibitor, in my mind.

BY MR. MILLS:

Q So my question is what is within the scope of the claim. So if a compound inhibits the PBMCs, and that is the assay that we use, does that tell us conclusively that is an inhibitor of IL-15 or the IL-15 receptor that falls within the scope of Claim 1?

MR. FELDSTEIN: Object to form. Calls for legal conclusion.

THE WITNESS: It could, yes.

BY MR. MILLS:

Q What if in our assay we are using CD8 positive NKG2D positive T cells, and we show that the -- administering the compound inhibits IL-15-induced proliferation of those cells, are we practicing the claim?

MR. FELDSTEIN: Object to form.
THE WITNESS: Does the patient have vitiligo?
BY MR. MILLS:
Q Yes.
MR. FELDSTEIN: Object to form.
THE WITNESS: We wouldn't have known at the time what the effect of NKG2D positive T cells in vitiligo would have been.
BY MR. MILLS:
Q So I don't understand what are you saying.
**A We wouldn't have known if those are the cells relevant to depigmentation of vitiligo.**
Q Okay. So if on April 24th, 2017 I took the compounds from Exhibit 2013 and I did the exact same in vitro IL-15 proliferation inhibition assay, but instead of using PBMCs I used CD8 positive NKG2D positive T cells, I would not be able to conclude on the basis of that study that I had obtained an IL-15 or IL-15 receptor inhibitor within the scope of the claims?
MR. FELDSTEIN: Object to the form. Calls for legal conclusion.
THE WITNESS: It might suggests it

inhibits IL-15 in the cells, but I don't think that it would be known to treat vitiligo.

BY MR. MILLS:

Q Let's take a look at page 4 of Exhibit 2013. Before we do that, I just want to ask: In Exhibit 2013, there is no in vivo experiment using any of the compounds that you have identified as IL-15 inhibitors. Correct?

**A It doesn't appear to be, no.**

Q Take a look, please, at page 4 of Exhibit 2013. Beginning at lines 1 through 8. Let me know when you have had a chance to read that.

**A Page 4, lines 1 through 8?**

Q Yes.

**A Okay.**

Q So in those lines, Exhibit 2013 states that there was a need to design a new drug based on a small synthetic molecule. Correct?

**A I see that, yes.**

Q The authors state that the present invention alters the concept of the treatment of IL-15 overexpression related diseases. Correct?

**A Yes.**

Q The authors state that the approach of

their invention relates to the inhibition of IL-15 biological activity by a compound that selectively binds to IL-15R alpha receptor. Correct?

**A I see that, yes.**

Q The authors state that their approach, their inhibitors, quote, should reduce the proinflammatory cascade as well as angiogenesis caused by the proinflammatory cytokine IL-15.

Do you see that?

**A Yes.**

Q So the authors are distinguishing prior inhibitors of IL-15 from their current inhibitors by saying that they both reduce the proinflammatory cascade as well as reducing angiogenesis. Correct?

**A That is what they say. I would have to review the data supporting angiogenesis.**

Q Let's look at page 2. Actually, we will start on page 1. Go ahead and read from page 1 starting at line 31, through page 2, 18, to yourself.

**A So we are still on the same exhibit, 2013?**

Q Yes.

**A Page 1, lines -- I am sorry, 31?**

Q Yes, it says significant involvement.

**A Yes, I see that.**

Q Just through the end of the paragraph on the next page.

MR. FELDSTEIN: Exhibit, page 3?

BY MR. MILLS:

Q There is a separate page numbering at the bottom that says page 3.

**A Okay.**

Q So looking at page 2, line 11, after listing a variety of compounds that in certain assays were indicated to inhibit IL-15 or the IL-15 receptor, the Exhibit 2013 states none of them has been approved for clinical use so far.

Do you see that?

**A Yes, I see that.**

Q They then identify as the most advanced a anti-IL-15 human antibody called AMG 714.

Do you see that?

**A Yes, I see AMG 714, HuMax 15 -- IL-15.**

Q The authors of Exhibit 2013 identify what they call, quote, the matter of serious concern is the effect of reverse signaling.

Do you see that?

**A Yes.**

Q It goes on to say, It is assumed that the antibody, HuMax-IL-15 and IL-15 complex, can itself

induce a cell response, thus limiting the therapeutic effectiveness of this antibody directed toward IL-15 neutralization.

Do you see that?

**A Yes.**

Q Let's look at Exhibit 2014. So my question -- well, let me just start by saying, specification of 2014 is in many ways very similar to 2014. I just want you to -- my question is about whether this exhibit as well used only in vitro cell proliferation assays using PBMC cells and did not have any binding assays or in vivo assays just like in Exhibit 2013.

MR. FELDSTEIN: Object to form.

BY MR. MILLS:

Q And you are welcome to look at whatever you need to. I will direct your attention to page 12, line 1.

**A I see the experiments were done in PBMCs.**

Q There are no in vivo experiments. Correct?

**A I don't see any in vivo experiments.**

Q There are no binding assay experiments. Correct?

**A I don't see anything, no.**

Q Same question for Exhibit 2015.
**A The first question is in PBMCs?**
Q In vitro assays in PBMCs.
**A I don't see in vitro assays.**
Q No in vivo assays. Correct?
**A Correct.**
Q No binding assays?
**A Not that I see.**
Q Exhibit 2015 uses a compound called Cefazolin. Correct?
**A Yes.**
Q Are you familiar with Cefazolin?
**A Yes.**
Q What is Cefazolin?
**A An antibiotic.**
Q Take a look at Figures 1 and 2 of Exhibit 2015.
**A Okay.**
Q So looking at Figure 1, they are reporting that there is an inhibition of IL-15 stimulated PBMCs using 300 micromolar Cefazolin for approximately 50 percent. Is that correct?
**A Yes.**
Q When they looked at the inhibition by that same amount of the same compound, they also found

proliferation of IL-2 stimulated PBMCs by approximately 30 percent. Correct?

**A Yes, roughly.**

Q So Cefazolin is, in your opinion, an IL-15 inhibitor. Correct?

**A Yes.**

Q Cefazolin also is an IL-2 inhibitor. Correct?

**A Based on these experiments, it is to a lesser extent, yes.**

Q It also has a third functionality for which it is much more famous, and that's inhibiting activity of bacteria. Is that correct?

**A That would be the predominant clinical use.**

Q If before April 24th, 2007 [sic] there was a printed publication disclosing administration of Cefazolin to a patient with vitiligo, in your opinion that would satisfy the claims of the '505 patent. Correct?

MR. FELDSTEIN: Object to form. Beyond the scope, calls for legal conclusion.

THE WITNESS: Sorry. Is the question whether I would expect that Cefazolin to

treat vitiligo? Can you restate it?
BY MR. MILLS:
Q So the question is, does it satisfy the two steps of the claim? So that -- you identify that the patient has vitiligo and then you administer the Cefazolin. Does that satisfy the steps of the claim?
MR. FELDSTEIN: Object to form. Beyond the scope, calls for a legal conclusion.
THE WITNESS: I am not sure.
BY MR. MILLS:
Q Let's look at Exhibit 2025. My first question is -- this exhibit also comes from our friends at the Warszawski Uniwersytet Medyczny, W-A-R-S-Z-A-W-S-K-I, U-N-I-W-E-R-S-Y-T-E-T, M-E-D-Y-C-Z-N-Y. Is that correct?
**A Yes.**
Q So Exhibit 2025 is the same applicant as Exhibits 2013 through 2015. Correct?
**A It appears to be, yes.**
Q And there is -- if not identity, there is at least substantial overlap of inventors. Correct?
**A It appears to be, yes.**

Q In Exhibit 2025, they also are using exclusively in vitro assays. Correct?

**A Yes.**

Q And in Exhibit 2025, they are not using any in vivo assays. Correct?

**A Yes.**

Q Nor are they using any binding assays. Correct?

**A I didn't see any, no.**

Q Let's go back to page 2 of Exhibit 2013. I want to ask you about the reverse signaling.

**A Where exactly in the reference are you?**

Q This is on page 2, line -- around 15.

**A Okay.**

Q So what they are saying here is that they administered this IL-15 antibody to neutralize the IL-15. Correct?

**A Are you referring to the HuMaX 15?**

Q Yes.

**A Yes, I mean they are discussing the use of those -- that antibody, as well as AMG 714 in that paragraph.**

Q Okay. And the goal of the antibody is to neutralize the IL-15. Correct?

**A Yeah, to inhibit IL-15 signaling.**

Q I think HuMax and AMG 714 are the same thing. Is that your understanding?

**A I would have to double-check the nomenclature to be absolutely sure.**

Q So do you agree that the reverse signaling means that when they administer the anti-IL-15 antibody instead of neutralizing the IL-15, that instead the antibody made the IL-15 able to induce a cell response?

**A I would need to review the reference that they cite, I think, in order to render sort of a more specific opinion about what they mean by reverse signaling. So I am not sure how well accepted that hypothesis is.**

Q So -- okay. In your declaration, you talk about IL-15 receptor alpha having a dual capacity as an inhibitor and also as an agonist.

Do you recall that?

**A Can you say it one more time, or point me to the specific area?**

Q I wish I had the paragraph right now, and I don't.

Do you recall testimony about IL-15 receptor alpha has the capacity both to inhibit IL-15 signaling as well as to enhance it?

MR. FELDSTEIN: Object to form.

THE WITNESS: I would have to see the exact area you are referring to, I think, to answer that.

BY MR. MILLS:

Q Okay. Are you familiar with the circulation half-life of IL-15 in the body?

**A I would have to look at the literature.**

Q In preparing your declaration, did you consider whether antibodies that inhibit IL-15 signaling in vitro act as agonists for enhancing IL-15 signaling in vivo?

MR. FELDSTEIN: Object to form.

THE WITNESS: I am not sure I consider that a predominant mode of action of the antibodies.

BY MR. MILLS:

Q Is that something that you evaluated -- let me withdraw the question. We can move on.

Do you need a break?

(Recess taken from 4:55 p.m. to 5:06 p.m.)

BY MR. MILLS:

Q Dr. Damsky, please take a look at paragraph 71 of your declaration. It spans a

couple pages. Spans on to page 34. In this paragraph, you are identifying what you say are exemplary IL-15 or IL-15 receptor inhibitors that were described in the '505 patent. Correct?

**A Yeah, they were known in the art and/or described in the '505 patent.**

Q Okay. And on page 34 where that paragraph continues, you cite Exhibit 2022.

Do you see that?

**A Yes.**

Q You are saying that the patent, at Column 7, line 63 through 64, identifies Exhibit 2022 as providing -- and you list -- one, two, three, four -- five different compounds that you say that the '505 patent has identified as inhibitors of IL-15 or the IL-15 receptor. Correct?

**A Yes, there are five there.**

Q Handing you Exhibit 2022. Thank you.

Do you recognize this document?

**A Yes.**

Q Did you review this document fully before you signed your declaration?

**A I don't remember what level of detail I read it in.**

Q So in the interest of time, I am going to

point you to pages 46 and 47 of Exhibit 2022. Go ahead and read Section 5.3.1 to yourself. And the question that I will be asking you when you finish is whether this reference states that ABT-737 is an inhibitor of IL-15 or the IL-15 receptor or whether it tells us that it is an inhibitor of Bcl-xL. And the same question for Nutlin-2, N-U-T-L-I-N, -2, and whether it tells us that is an IL-15 inhibitor or whether it tells us it's an inhibitor of Mdm2?

**A Okay. Can you repeat the question.**

Q Yes. In this Section 5.3.1 in Exhibit 2022, you agree that the reference is trying to make some broader points about PPIs by looking at one compound, Compound 3, that it says is an IL-2 receptor inhibitor. And then making comparisons to compounds ABT-737 and Nutlin-2 that inhibit completely different things that are not IL-2 or IL-15 receptors. Correct?

I will point you on page 37 to the middle of the page right after the Vassilev -- V-A-S-S-I-L-E-V.

**A I see it.**

Q It says crystallized inhibitors of Bcl-xL (ABT-737).

Do you see that?

**A Yes.**

Q And an inhibitor of Mdm2 (Nutlin-3).

Do you see that?

**A Yes.**

Q So Exhibit 2022 is identifying ABT-737 as an inhibitor of Bcl-xL. Correct?

**A As one function, yes.**

Q It is your belief that -- well, let me ask you this. Bcl-xL, is that a component of the IL-2 receptor?

**A Not directly, no. No.**

Q Is it a component of the IL-15 receptor?

**A No.**

Q And then the same question about Mdm2, is that a component of the IL-2 receptor?

**A No.**

Q And you agree that Mdm2 is not a component of the IL-15 receptor. Correct?

**A Yes.**

Q Thank you. You can set that document aside.

I am now going to ask you a series of questions about paragraph 70 of your declaration. In paragraph 70 of your declaration, you provide a list of 33 exhibits that you relied on to form your

Appendix A. Correct?

**A Thirty-two.**

Q So in the middle three lines, I am getting eight each line.

**A Agreed.**

Q So that is 24?

**A Yes.**

Q The first line is three more, so that is 27?

**A Yes.**

Q And the last line -- 28, 29, 30, 31, 32. You are right.

So my next question is, I want you to compare your list of exhibits that you have relied on for your appendix here to the exhibits that you believe are incorporated by reference in the '505 patent. And I want you to give me the number of the 32 references you relied on for your appendix, I want to know the total number that are not incorporated by reference in the '505 patent.

Do you understand the question?

**A I do. I am not sure I have time to go through and figure that out.**

Q Well, that is my last question. And as long as you answer it responsively and truthful, we

will go ahead and sit here while you give us that answer.

**A Sorry. Repeat it one more time for me.**

Q So you have the exhibits listed on page 33, paragraph 70 of your declaration. I want you just to go through and see which are incorporated by reference and I want you to give me the number that are not incorporated by reference.

**A Can I have all the exhibits?**

Q I could give them to you. I think before when you were answering questions about what is incorporated by reference, you were looking at the patent to see what was listed on the patent.

MR. FELDSTEIN: But he is looking at appendix exhibit numbers here.

MR. MILLS: Well, so that is a good point.

BY MR. MILLS:

Q You have 2013, -14, -15. We did those already. Go ahead and mark those off. Those are not there. I will give you all of those exhibits. You might want to just make a mark so you can --

**A Is it okay to do that? I wasn't sure I could do that on here.**

Q Yes. Start with the ones that you have,

and I will give you more.

**A Want me to start looking through some?**

Q Sure. Is 2028 on your list?

**A Yes. Okay.**

Q You have done all the ones you have so far?

**A Yes.**

Q 2028.

**A Yes. Is it okay I'm just putting these on the floor over here?**

Q That's fine.

2029.

**A Thank you. Okay.**

Q 2030.

**A Yes.**

Q 2032.

**A Okay.**

Q 2049.

**A Sorry. Yes. Thanks. Okay.**

Q 2050.

**A Okay.**

Q 2102.

MR. FELDSTEIN: Is that all of them now? Are there more to come?

THE WITNESS: We are a third of the

way through.

MR. FELDSTEIN: I think we are over time. If Dr. Damsky doesn't mind finishing the review, it is fine with me.

BY MR. MILLS:

Q 2106.

**A Yes. Okay.**

Q 2103.

**A Okay.**

Q 2019.

**A Yes. 2109 -- 2019. Okay. Okay.**

Q 2020.

**A I am not sure that is here.**

Q What about 2021?

**A No, I don't see 2021.**

Q Okay. 2051.

**A Yes. Okay.**

Q 2087.

**A Okay.**

Q 2104.

**A Okay.**

Q 2105.

**A Okay.**

Q 2107.

**A Uh-huh.**

Q 2108.
**A Okay.**
Q 2110.
**A Yes. Exhibit 2110. I am done.**
Q Exhibit 2111.
**A Okay.**
Q Exhibit 2112.
**A Okay.**
Q Exhibit 2113.
**A Yes. Okay.**
Q Exhibit 2114.
**A Okay. Okay.**
Q Let's check what is the count. Of the 32 exhibits that you relied on for your appendix, what is the number so far you identified that are not incorporated by reference in the final patent?
**A I haven't found any, but recognizing that I have been cross checking a lot of different numbers against a lot of different numbers, it is possible I may have missed something.**
Q When you say you haven't found any, you are saying you haven't found any of those exhibits from your appendix that are incorporated by reference in the '505 patent?
**A Yes.**

Q So what is the number of references that you checked?

**A Twenty-six.**

Q Twenty-six references in your appendix that are not incorporated by reference in the '505 patent. Correct?

**A That is what I reviewed.**

MR. MILLS: Thank you.

MR. FELDSTEIN: Take a break for a few minutes.

(Recess taken from 5:47 p.m. to 5:54 p.m.)

CROSS-EXAMINATION

BY MR. FELDSTEIN:

Q We just have a few questions for you, Doctor.

You got your Ph.D. in 2011. Is that correct?

MR. MILLS: Objection to form.

THE WITNESS: Yes.

BY MR. FELDSTEIN:

Q Subsequent to your Ph.D. -- between obtaining your Ph.D. in 2011 and April 2017, can you explain what experience you had, if any, treating autoimmune diseases or researching

cytokine pathways relevant to treating autoimmune diseases?

MR. MILLS: Objection to form. Scope, calls for a narrative.

THE WITNESS: In terms of treating patients with autoimmune diseases, I would have been comfortable treating a broad range of patients with autoimmune diseases of the skin, including vitiligo.

In terms of research related to cytokine, similarly our group was active in researching cytokines in dermatology and beyond dermatology in a number of different settings using translational approaches, invasive approaches in clinical trials.

BY MR. FELDSTEIN:

Q You talked a lot about the date of April 2017 in your direct examination.

Do you recall?

**A Yes.**

Q In the year from April 2017 to April 2018, would the art with respect to IL-15, IL-15 receptor inhibitors and the pathway have increased?

MR. MILLS: Objection to form.

Outside the scope.

THE WITNESS: Yes.

BY MR. FELDSTEIN:

Q You were asked questions about hypothetical assays, such as proliferation assays.

Do you recall?

MR. MILLS: Objection to form.

THE WITNESS: Yes.

BY MR. FELDSTEIN:

Q And to your understanding, did those hypotheticals not include specific conditions or specific data?

MR. MILLS: Objection to form.

THE WITNESS: Yes.

BY MR. FELDSTEIN:

Q In Exhibit 2013, for example -- that was one of the publications by the Polish group.

Do you recall that one you looked at on direct examination -- your cross-examination?

**A I may have it over here, yes.**

Q Did the assays there include -- was it a specific assay that is included in there to determine IL-15 connectivity?

MR. MILLS: Object to form.

THE WITNESS: Yes.

BY MR. FELDSTEIN:
Q Were there specific conditions of the assay described in Exhibit 2013?
MR. MILLS: Objection to form.
THE WITNESS: Yes.
BY MR. FELDSTEIN:
Q Is there specific data with respect to the assays under those conditions?
MR. MILLS: Objection to form.
THE WITNESS: Yes.
BY MR. FELDSTEIN:
Q For an assay that has specific -- a specific assay with specific conditions and specific data, such as Exhibit 2013, would a person of ordinary skill in the art have been able to conclusively determine whether a compound is an inhibitor of IL-15 or the IL-15 receptor?
MR. MILLS: Objection, form.
THE WITNESS: Yes.
BY MR. FELDSTEIN:
Q You were also asked about chemical and oxidative types of vitiligo.
Do you recall?
**A Yes.**
Q Can you clarify, is -- does vitiligo

include all losses of pigmentation or just the loss due -- that is an autoimmune disease?

MR. MILLS: Objection, form.

THE WITNESS: Just the loss that's due to an autoimmune disease.

BY MR. FELDSTEIN:

Q Based on what is taught in the '505 patent, would you expect that an inhibitor of IL-15 or an IL-15 receptor would treat vitiligo resulting from any inducing cause?

MR. MILLS: Objection, form.

THE WITNESS: Yes.

BY MR. FELDSTEIN:

Q Can you explain why?

**A Vitiligo is an autoimmune disease that is a result of immune activation against melanocytes, and the mechanism is shared among cases of vitiligo.**

Q You were asked about the disclosure of the structure of antibody CHMB7 and its an epitope.

Do you recall?

**A Yes.**

Q In your opinion, would a person of ordinary skill in the art have needed to understand the structure of CHMB7 or its epitope to understand

the disclosure of the '505 patent?
MR. MILLS: Objection, form.
THE WITNESS: No.
BY MR. FELDSTEIN:
Q Why not?
**A It was very common to use a representative inhibitor from a well-known class.**
MR. FELDSTEIN: Okay. That is all we have for you, Doctor.
MR. MILLS: Recross.
REDIRECT EXAMINATION
BY MR. MILLS:
Q Dr. Damsky, before your counsel asked you that series of questions just now, you went into a room with him and had an opportunity to discuss your testimony. Correct?
**A Yes.**
MR. MILLS: No further questions.
MR. FELDSTEIN: We're off the record. Five days is fine.
THE COURT REPORTER: And you would both like roughs?
MR. FELDSTEIN: Rough would be great.
MR. MILLS: Rough is great for us, too.

(Whereupon, the deposition adjourned at 6:00 p.m.)

J-U-R-A-T

I, WILLIAM DAMSKY, M.D., Ph.D., do hereby certify that the foregoing testimony taken on November 20, 2023, is true and accurate, including any corrections noted on the corrections page, to the best of my knowledge and belief.

WILLIAM DAMSKY, M.D., Ph.D.

At in said county of , this day of , 2023, , personally appeared , and he made oath to the truth of the foregoing corrections by him subscribed.

Before me, , Notary Public
My commission expires:

TRANSCRIPT CORRECTIONS

REPORTER: Sarah J. Miner

CASE STYLE: FORTE BIOSCIENCES, INC. v. UNIVERSITY OF MASSACHUSETTS

DEPONENT: WILLIAM DAMSKY, M.D., Ph.D.

| PAGE | LINE | CORRECTION | REASON FOR CHANGE |
|---|---|---|---|

NAME:

C E R T I F I C A T E

I hereby certify that I am a Notary Public, in and for the State of Connecticut, duly commissioned and qualified to administer oaths.

I further certify that the deponent named in the foregoing deposition was by me duly sworn and thereupon testified as appears in the foregoing deposition; that said deposition was taken by me stenographically in the presence of counsel and reduced to typewriting under my direction, and the foregoing is a true and accurate transcript of the testimony.

I further certify that I am neither of counsel nor related to either of the parties to said suit, nor of either counsel in said suit, nor am I interested in the outcome of said cause.

Witness my hand and seal as Notary Public the 27th day of November, 2023.



Notary Public
My Commission Expires:
November 30, 2027

**A**
**a.m** 1:15 67:3 67:4
**Abbas** 129:16 129:18,21,24 130:8,16,24 131:3,12
**AbbVie** 74:20
**ability** 6:17
**able** 11:23 14:8 37:10 59:17 197:24 206:14 207:4 235:15,24 236:19,22 248:19 257:8 270:15
**absent** 100:13 222:25
**absolute** 197:21
**absolutely** 28:10 198:19 257:4
**ABT-737** 260:4 260:16,24 261:5
**Abul** 129:16,18 129:21,24
**academic** 32:24 33:2,3 34:22 35:10 110:4 111:14
**Academy** 113:2,4,10 113:14
**acceptable** 142:6
**accepted** 40:3 40:4,4,7 139:12,22 245:16 257:14
**accessible** 209:3,16
**accident** 119:1
**accurate** 6:14 58:2,17 79:20 82:14 274:4 276:11
**accurately** 82:21 229:2
**achieved** 33:10
**achievement** 70:1
**achieving** 68:8 68:17 69:16 69:21 72:15
**acid** 173:24 174:14 175:3 175:9,13,14 175:18,20 176:24 177:4 178:3 179:6 179:13,20,21 180:20
**acquired** 87:22 88:14 88:20
**act** 92:9 157:12 258:11
**acting** 95:7 160:2
**action** 158:25 258:15
**activate** 60:1,4 95:14,17 97:21 123:20
**activated** 169:13,19 213:20
**activates** 58:25 59:4 59:15 97:23 97:24 98:18
**activation** 94:10 271:16
**activator** 92:8
**active** 268:11
**actively** 55:13
**activity** 162:3 216:5 250:2 254:13
**actual** 88:3 177:11 186:1
**add** 184:3 190:5 200:8
**adding** 188:19
**addition** 122:25 169:21 191:4
**additional** 9:7 156:6,7 184:11,14 199:21 236:24
**address** 4:7,9 134:3
**addressed** 146:19
**adjourned** 273:1
**administer** 126:24 179:17,20 182:24 184:1 196:2,3 205:21 225:3 225:4,9 255:6 257:6 276:4
**administered** 126:13,16,18 180:10 184:25 185:5 185:6 209:16 231:5 256:16
**administering** 123:12,19 156:1 159:21 179:12 180:7 199:10 208:3 223:3,12 247:23
**administers** 123:15 157:7
**administrati...** 121:4 218:4 219:11 245:25 246:15 254:17
**admit** 85:13
**Advance** 74:18
**advanced** 251:15
**adverse** 99:23
**adviser** 107:23
**affiliated** 54:14 55:8
**affiliation** 53:22
**affinity** 168:15
**afternoon** 13:20
**aged** 115:21
**agency** 77:11
**ago** 8:21 15:9 66:3 86:5
**agonist** 257:17
**agonists** 258:11
**agree** 5:4 12:8 14:10 15:16 40:3 42:20 43:5 53:20 57:10 60:21 63:12,15 66:9 74:25 76:7 88:12 88:17 94:12 95:10,15 97:12 103:21 104:4 115:9 115:11 119:9 147:15 149:15 159:2 159:20 171:1 171:5,13 174:17 177:2 217:19,21 224:24 225:25 231:11 241:1 241:15 242:3 242:20 257:5 260:12 261:17
**agreed** 78:20 262:5
**agreement** 80:5,21 224:21 225:23
**ahead** 24:5 30:1 72:9 74:8 88:9 134:16 137:20 138:13 164:6 168:22 173:5 234:20 236:25 242:9 250:18 260:2 263:1,20
**AKA** 219:3
**al** 144:7
**alive** 168:24
**allow** 198:13
**allows** 196:11 204:24
**alpha** 57:19,23 60:14,16,22

61:6,11,12
61:15,21,23
62:3,6,25
63:11,16
163:7,14,16
163:20
165:19,22
166:3,21
167:2,10,17
168:1,6
169:1,14,16
169:20,23
171:2 172:24
173:1 174:19
175:16
176:17
187:12
188:18,20,23
189:6 190:20
191:17
193:19
194:11,16
196:2 204:13
204:22 205:1
205:2,8
206:1,3,11
206:12,18,19
207:9 208:3
208:5,6,17
208:17,20
209:1,4
210:5,11,13
210:19,20,25
211:3,11,13
211:18,20
212:2,3,5,6
212:18,20
213:19,19
214:7,18
215:7,13,15
220:7,15,25
221:2 222:6
250:3 257:16
257:24
**alpha's** 206:19
**alternative**
151:11
210:17
**alters** 249:22
**altogether**
94:17
**ambiguity**
112:24
**American**
112:4 113:7
113:10,14,23
**AMG** 251:16
251:18
256:21 257:1
**amount** 78:11
79:17 156:2
157:8 159:22
221:15
253:25
**amounts**
244:13
**analogy**
165:21
166:10,14
**analysis**
134:25
142:20
226:11
**and/or** 259:5
**angiogenesis**
250:7,14,16
**anneal** 174:6
177:5 179:6
179:13
**annealing**
175:14
**announce**
44:19
**announcem...**
48:13 72:19
**announcing**
45:14
**annual** 3:18
90:24
**answer** 5:9,12
6:22,23 7:3
14:23 16:23
44:7 47:17
69:1 70:10
70:11,15,23
70:24 71:4
84:6,12
103:10
125:14 142:6
161:24 164:6
165:2 172:1
173:5 183:6
183:12,15
192:17
194:13
195:18
196:22 200:3
209:12 218:8
218:13,14,16
223:11 227:6
227:7 228:5
228:7 229:1
229:25 230:4
230:7 242:11
258:4 262:25
263:2
**answered**
16:16 27:20
68:21,25
103:17 107:4
153:24 228:4
**answering**
26:23 72:6
77:10 263:11
**answers** 71:5
194:5
**anti-CD122**
88:19
**anti-IL-15**
251:16 257:6
**antibiotic**
253:15
**antibodies**
200:18,19
201:21,23
202:16,18
204:5 205:12
205:16 207:8
207:9,11,13
258:10,16
**antibody** 65:1
88:19 173:7
173:9 200:11
200:12,13,16
200:17,22,23
200:25 201:7
201:12,16
202:3,21
203:4,10,14
203:18,24
204:21,22
205:21 206:6
206:18,24
207:2,15,24
208:3,4,9,16
208:23
210:24 225:5
225:7,10,13
225:18 226:1
227:4 228:2
228:19 229:7
229:22,24
230:10,17
231:4,8
251:16,25
252:2 256:16
256:21,23
257:7,8
271:20
**anticipation**
79:23
**antigen** 170:5
**anyplace** 90:4
**anytime**
127:18
**apologize**
91:16
**APPEAL** 1:3
**appear** 241:4
242:12
249:10
**appearance**
120:1,4
**appeared**
274:12
**appearing**
135:16
**appears** 24:17
43:22 44:15
48:13 49:23
51:14 53:7
57:13 58:4
65:13 67:23
69:23 72:18
91:1 97:5
104:8 118:1
145:12
242:11
255:21,25
276:7
**appendix**
24:18 236:25
237:2,10,16
237:20,21
240:2,7,15
241:5,8,9,15
262:1,15,18
263:15
266:14,23
267:4
**applicant**
242:2,11,18
255:19
**application**
41:10 50:7

144:25 145:5 145:6,15,16 145:20 149:11 150:2
**apply** 130:4 146:17
**applying** 129:25 130:4
**appointments** 111:14,16,20 111:23
**approach** 3:21 64:21 197:19 249:25 250:5
**approached** 64:12
**approaches** 268:15,15
**appropriate** 17:3 70:11 227:8 235:11
**approval** 80:8
**approved** 80:4 125:15 238:1 251:12
**approximately** 13:21 22:11 30:22 253:22 254:2
**April** 145:3,20 145:22 146:7 146:23 147:1 147:6,15 148:1,7,10 148:14,18 149:1,6,12 149:17,20 150:15 151:4 151:7 217:22 231:12 248:15 254:16 267:23 268:18,22,22
**area** 12:17 118:1 119:3 123:7 208:17 257:20 258:3
**arena** 76:22
**arguing** 227:19
**arisen** 35:16
**art** 59:3,21 148:25 149:1 149:6 150:5 151:14,24 155:23 217:22 236:19 259:5 268:23 270:15 271:24
**article** 3:9,12 3:16 40:3,15 40:17 43:22 47:24 48:11 49:15 73:22 104:25 230:23
**articles** 8:5 34:17 134:2 135:15 136:2
**Arts** 113:11,14
**aside** 42:10 73:11 82:25 100:20 102:23 104:10 105:24 261:21
**asked** 5:19 16:16,18 47:11,20 54:23 55:5 68:20 76:14 76:17 85:17 86:17 103:8 103:16 107:3 140:12 153:24 164:2 218:10 228:4 269:4 270:21 271:19 272:13
**asking** 5:14 10:23 11:21 13:16 26:24 43:12 47:25 54:11 55:6 58:22 67:1 70:5 71:19 78:4 80:16 83:10,12 87:7 94:25 139:8 151:21 152:23 154:2 166:9 173:4 228:13,13,14 240:6 242:16 260:3
**assay** 181:9 181:20 186:12,14,21 187:3,7,9,10 188:17 189:20 190:18 191:6 191:15 192:19 195:23 196:5 196:14,25 197:12,13,14 201:15 246:25 247:2 247:13,21 248:17 252:23 269:22 270:3 270:12,13
**assays** 186:5 186:7,8 187:5,8,15 187:17 188:13 242:22 243:8 251:10 252:11,12,13 253:3,4,5,7 256:2,5,7 269:5,5,21 270:8
**assembling** 237:22
**assess** 25:20
**assessed** 186:18
**assistant** 68:8 69:21 72:15
**associate** 58:21 176:17 204:21 205:3
**associated** 58:13,15 59:11 115:21 163:8 170:15 209:5
**associates** 168:1
**associating** 167:3
**association** 31:20 191:16 192:7 204:13 211:1
**associations** 138:19
**assume** 6:4 112:16,17 114:18 138:25 158:23 178:20 185:3 186:9 193:14 193:24 203:24 204:1 207:2 212:3
**assumed** 251:24
**assuming** 188:22 212:17
**attached** 166:17,21
**attack** 241:24
**attend** 48:20 54:18,19
**attended** 38:25 53:4 54:10
**attending** 132:10,10
**attention** 252:17
**attorney** 6:20 6:20
**attorneys** 5:20 12:21 13:10 13:13 131:22
**attract** 54:4
**attracted** 54:10
**attributed** 74:5 74:12
**Auremolimab** 88:19
**authenticity** 39:12 42:16 43:14,19 49:4 51:11 51:19 67:11 69:3,4 73:16 90:18 100:24 102:25 103:9 103:13 104:15 105:9

**author** 33:22
**authors** 35:1,4 39:23 50:18 249:21,25 250:5,11 251:19
**autoimmune** 267:25 268:1 268:6,8 271:2,5,15
**Avenue** 2:4,9
**awards** 111:1 111:1,5,9
**aware** 33:25 35:23 37:6 37:16,20 42:2 46:20 50:13,24 51:6 53:21 55:7 58:24 59:3 75:21 88:13,14,18 88:23 98:19 113:10 114:11 120:11 121:15 125:9 129:17,18,21 129:24 130:17,23 131:1 140:2 141:11,12 142:7,24 143:24 152:3 162:12 164:4 164:16 169:13,19 216:17 217:23 226:23 230:8 245:15

**B**

**B** 3:7 170:22 170:22
**baby** 226:10
**Bachelor's** 105:25
**back** 40:22 62:16 66:23 84:10 90:2 97:14 112:13 116:16 135:24 137:25 157:17 164:1 164:20 165:11 170:25 185:6 201:25 205:9 240:13 256:10
**backwards** 115:14
**bacteria** 107:10,13 254:13
**bad** 189:19
**balance** 235:11
**Bankhead** 73:23
**baseball** 165:22 166:10,12
**based** 35:16 65:22 75:7 127:1 157:22 177:12 178:17 193:4 202:5 203:13 242:22 249:18 254:9 271:7
**baseline** 184:22 185:6
**basic** 96:4 129:9
**basically** 166:10
**basis** 11:14 54:20 248:20
**Bcl-xL** 260:6 260:23 261:6 261:9
**beautiful** 207:5
**becoming** 69:21
**began** 41:2 76:2,8 110:4 110:6
**beginning** 65:16,23 66:8,12 78:25 110:13 115:6 119:8 249:12
**begun** 80:6
**behalf** 4:13 25:15 86:11 87:1,22
**belief** 33:18 78:24 127:19 261:8 274:6
**believe** 4:14 8:18 20:7 22:19 31:23 33:21 37:14 37:19 38:23 39:3 45:12 55:24 60:20 62:25 70:10 76:24 83:16 84:7,23 95:13 101:15 108:9 110:21 140:25 146:19 147:5 237:15,17 238:24 262:16
**believed** 25:3
**best** 5:7 7:15 13:17 18:23 19:9,19 20:7 24:24 28:15 32:2 75:7 274:6
**beta** 56:15,18 57:23 58:16 58:24 59:4 59:25 60:8 63:2 64:21 162:25 163:7 163:12,19,21 166:6 167:12 171:6,9 172:20 174:21 175:16 178:5 192:18,20 193:22 194:12,17 196:1,2 211:1,4,11 211:13,19,20 212:7,18,21 212:25 213:20 214:8 214:22 215:10,18,19 216:10,20 218:3 219:3 219:12 220:7 220:21 221:4 221:9,21
**better** 64:21 187:20 188:1 188:7
**beyond** 26:9 26:21 30:5 32:16 78:3 82:13 105:5 158:19 160:9 160:17 161:1 161:19 175:6 176:9 177:8 178:10 179:24 180:13,24 181:14 182:5 183:3 184:7 184:17 185:9 185:17 190:1 190:25 191:4 191:20 192:11 193:11 194:15 195:15 196:19 197:5 198:3 200:6 207:19 212:13 213:24 214:13 215:2 216:1,13,23 254:22 255:9 268:13
**bias** 35:15,20
**big** 55:20,21 55:22 62:24 100:7,11
**Bill** 101:24 102:7
**billdamsky** 44:9 67:16 101:4
**bills** 23:4,6,14
**bind** 63:3 200:20 201:8 201:12 205:1 205:7,25 207:13 209:8

210:24 231:13
**binding** 94:24 98:3 186:7,8 186:10,12,14 186:17,21 187:3,10,13 188:13,17,20 188:23 189:5 189:20,21 190:17,19 191:4,6,12 191:15 192:19,22 195:10,10,20 195:22 197:13,25 199:8,9,9,11 201:15,17,22 202:10 205:2 206:3,7,10 206:12,23 207:10,12 209:2,10 212:21,21 213:18,19 214:8 215:9 215:12,18,21 215:23 216:9 216:20 252:12,23 253:7 256:7
**binds** 97:15 175:20 188:5 188:6 193:15 199:9 202:13 203:2,19,21 203:22,24 206:18 207:16 214:9 230:7,8,12 230:15,21 250:3
**biochemical** 187:3
**biologic** 156:16 191:3 198:24
**biological** 156:19 199:1 250:2
**biology** 106:1 106:9,12,13 106:14,16,24 106:25 107:1 107:3,4,5,7
**BIOSCIENC...** 1:5 275:4
**Biotechnolo...** 74:20
**bird's-eye** 94:2
**bit** 5:6 16:15 62:16 94:17 121:20 122:19 190:4 224:11
**Blake** 1:16
**blanket** 209:12
**Bleomycin-l...** 3:9
**block** 3:19 65:1 201:22 206:19 207:21 220:4 220:6,21,25 221:4,9
**blockade** 232:8 234:24
**blocking** 193:20,23 194:9,18 195:10 202:15 207:3 211:10 220:15 221:14
**blocks** 192:7 193:15 197:25 199:10 201:17 203:20,21,22 207:16
**blood** 243:12
**board** 1:3 71:1 112:3,5,10 112:18,19 114:20,25 226:23
**body** 64:25 97:13 116:24 141:14 149:21 167:24 168:12,25 258:7
**body's** 142:21
**book** 130:24
**born** 99:21
**Bosenberg** 108:1
**bottom** 10:1 24:13 40:2 41:9 44:22 44:24 55:22 73:2 101:3 123:2 238:20 251:6
**bound** 163:20 165:19 209:23 210:4
**boundary** 18:7
**break** 7:4 116:5 132:25 137:18 138:2 141:15 143:21 219:24 258:20 267:9
**breakdown** 141:3 142:20
**breaks** 7:1 138:3
**Brett** 101:24 102:7
**broad** 8:5 11:5 96:9 143:9 143:25 162:3 169:12 194:3 197:8 268:7
**broaden** 136:20
**broader** 173:21 174:2 260:13
**broadly** 121:18 157:12 173:18 222:11
**bulb** 122:25 123:2
**bulge** 122:22 122:25 123:4 123:7,21 124:1,8,23 125:6,12 127:4,7
**bulk** 129:4
**bunch** 181:21
**busy** 82:1
**bystander** 163:14 165:19 166:22,25 167:1,16

**C**

**C** 2:1 56:15,16 56:19 59:12 59:14 60:4 60:11 172:8 276:1,1
**C4** 170:3
**calculate** 187:20
**call** 121:13,14 171:24 172:2 172:8,13 251:20
**called** 32:8 37:21 39:21 39:22 44:8 60:9,11 64:16 77:22 114:1,7 119:23 122:22 133:18 171:8 171:11,21 205:19 224:14 251:16 253:9
**calls** 26:10 103:16 158:19 175:6 177:8 178:10 179:24 180:13,24 181:14 182:5 183:3 184:7 185:9,18 189:3 190:1 190:25 191:10,20 192:11 193:11 195:15 196:19 197:5 198:3 245:14 245:21 246:19 247:5 247:18 248:24 254:22 255:9 268:4

**camera** 66:20
**cancer** 108:22 115:10,13,23 115:24 116:1 116:3
**capacity** 257:16,24
**capital** 64:12
**career** 30:17 110:4 111:14 130:20
**careers** 32:21
**cascade** 250:7 250:14
**case** 6:9 9:17 10:1 11:7,12 11:19,25 12:8,12 13:7 22:12 23:14 24:13 27:5 34:20 35:23 36:11 37:3,6 38:4,5,8,9 45:24 56:21 57:13 69:23 72:18 83:15 83:24 84:7 84:24 85:1,3 86:10,24 87:2,10,12 87:13 88:6 88:18 90:9 91:2 129:20 129:23 131:6 131:9,15,18 131:22,25 132:1,12,16 132:20,22 144:9 151:12 154:16 160:23 163:6 206:17 210:8 275:4
**cases** 118:25 119:25 128:2 271:17
**categorically** 157:18,21 160:5
**category** 160:6 160:14
**cause** 121:21 138:19 140:13 271:10 276:16
**caused** 138:16 141:13 143:4 250:8
**causes** 138:7 222:23
**causing** 139:25 140:6 142:22
**CD122** 60:9 171:11 172:20,22 200:11,13 201:17,18,22 201:22 202:10 203:4 203:14 218:3 219:3 230:10 230:17,21
**CD132** 60:11 172:13,17,18 222:9,12
**CD8** 169:25 170:6,12 217:16,24 243:13,15,19 243:24 247:2 247:21 248:18
**ceases** 184:4
**Cefazolin** 253:10,12,14 253:21 254:4 254:7,18,25 255:6
**cell** 55:24 56:4 56:7,12,18 57:3,6,6,8,11 57:14,18,19 57:23,24 58:3,5 60:17 60:22,24 61:7,7,8,11 61:15,17,21 61:22,24 62:3,4,6,7,9 62:11,14 63:7,13,17 74:18 106:9 106:13,23,25 107:3,4,6 114:7 162:8 163:2,7,9,13 163:14,16,17 163:20 165:7 165:8,19 166:22,22,23 166:24,25 167:2,11,12 167:16,18,25 168:8 169:1 169:3 176:16 176:17,20 177:2 178:1 178:4,14,21 179:18 182:9 199:6,7 203:5 204:16 205:4,8,10 205:13,25 206:13 207:24 208:6 208:7,10 209:2 210:6 210:15 211:19 217:3 252:1,11 257:9
**cells** 56:6 106:25 107:2 121:19,21 122:4,15,19 122:23 123:6 123:21 124:7 124:20,21,23 125:4,11 127:3,21 143:19 162:6 162:12,13 164:5,5,16 169:13,15,19 169:21,22,25 170:1,3,6,7,9 170:12,13 178:6 179:1 180:4,8 181:21,21 183:18,25 196:1,10,12 199:5 205:17 216:11,21 217:12,16,24 218:2 219:3 219:11,14 243:8,12,14 243:15,16,20 243:23,25 247:1,3,22 247:24 248:9 248:14,19 249:1 252:11
**certain** 118:18 119:25 120:2 170:14 251:9
**certainly** 106:5 108:14
**certainty** 194:23
**certification** 112:4,7,11 112:21
**certifications** 112:3,18,20
**certify** 274:3 276:2,5,13
**cetera** 225:2
**chain** 64:21 97:2
**challenging** 135:14
**chance** 249:13
**CHANGE** 275:11
**changed** 151:14,24 152:4
**characteriza...** 204:7
**characterize** 84:3 108:16 120:24 164:9 164:11
**characterized** 130:14
**charge** 20:3,6 20:25 21:18 21:22
**charged** 20:9 20:23 21:2,7 21:14,17,20 22:20,25
**Charles** 73:23
**chart** 122:1,9 122:10 238:25 239:3
**check** 23:19 97:11 214:17 242:5 266:13
**checked** 267:2
**checking**

266:18
**checks** 23:17
**chemical** 119:1,8 236:15 270:21
**chemically** 118:13,17
**chemically-i...** 223:8,10
**chemicals** 119:18
**chimeric** 225:13,18
**CHMB7** 271:20 271:25
**ChMBC7** 225:5,10,18 226:1,15 227:4 228:2 228:19 229:7 229:21 230:7 230:8,12,14 230:22 231:7 231:13
**choice** 189:19
**circle** 55:20,21 55:22
**circulation** 258:7
**circumstance** 197:24
**circumstanc...** 31:14,15 76:23 120:2
**citation** 11:21
**cite** 237:2 257:11 259:8
**cited** 7:12,17 7:22 11:3 14:1,6,25 15:17,20,23 16:8 155:10
**claim** 154:13 154:14,20,22 154:23 155:1 155:4,10,14 155:18,22 156:1,6,7,23 157:9 158:17 159:23 160:15 161:17 165:11,12 170:25 171:4 171:13 172:15,19 173:6,9,12 173:15,17,17 173:19,20,20 173:21,23,23 174:2,2,13 175:2 176:3 176:6,11 177:4,15,17 179:5 180:11 180:22 181:12 189:1 189:9,24 190:6,9,10 190:14,22 192:8,24 194:8 197:16 197:18 220:11,18 221:13 223:2 223:12 247:12,16,25 255:4,7
**claims** 146:14 147:17,22 149:17,25 150:14,24 151:10,25 152:21,24,24 153:1,6,9,12 153:17,17,21 154:1,1,5,17 154:21 245:8 245:18,24 246:14,24 248:22 254:19
**clarification** 6:10
**clarify** 10:6 13:4 23:5 71:10,14 72:2 164:8 164:12 235:7 270:25
**class** 39:21 106:7,14,14 108:12 272:7
**classes** 106:6 106:13 108:10
**clear** 16:13 62:18 80:12 103:11 135:25 210:18 226:20,25 228:12 242:8
**clinical** 76:19 76:25 77:9 77:14,16,21 77:23 78:5 78:15,18,24 79:7,16 80:21,25 81:6 82:22 83:4,9,22 86:19 89:20 89:24 251:12 254:14 268:16
**clone** 200:17 200:23,24
**clones** 201:12 201:24
**close** 137:19
**closely** 129:5
**co-wrote** 130:24
**coauthored** 50:5
**coauthors** 31:24 49:8
**cocktail** 83:2 86:21
**collaborate** 29:7 47:4,18 47:19 76:21
**collaborated** 16:5 28:20 29:4,9,17,21 31:23 33:18 33:24 35:25 43:15 238:3
**collaborating** 40:17 41:2 45:18
**collaboration** 40:20 43:6 43:10 45:14 84:4
**collaborative** 41:25 84:5
**collation** 237:25 238:1
**color** 120:4
**colors** 207:5
**column** 153:9 153:13 242:25 259:11
**combined** 99:18,19 100:15
**come** 8:6,8 14:12 23:17 32:14 81:25 82:16 84:10 118:18 123:25 124:9 125:5 127:7 135:24 152:16 154:22 237:20 264:24
**comes** 23:10 198:6 209:10 255:14
**comfortable** 143:2 268:7
**coming** 209:25
**comment** 99:3
**commission** 274:17 276:23
**commission...** 276:3
**committed** 18:22
**common** 11:14 45:19 68:12 69:25 82:17 92:16 92:22,23 93:1,3,4,5,6 93:7,8,10 109:7,16,21 117:17 139:10 170:2 172:9 199:23 219:8 272:6
**commonly** 12:16 81:1 137:8 139:11 139:22 151:4 230:9
**communicate** 13:6

**communicat...** 102:20
**communicat...** 103:22 104:5
**companies** 36:15,16 75:1 76:21 76:21 77:21 81:1,21 82:17 105:21
**company** 37:7 37:13,21 38:1 64:16 75:17,19,20 85:14
**compare** 262:14
**comparisons** 260:15
**compatible** 144:1
**complete** 24:15 80:6 109:18,18,25
**completed** 108:25 109:22 110:3 111:10,24 112:8,13 129:8
**completely** 82:14 221:21 260:17
**complex** 56:22 96:22,25 97:10 163:21 167:3,17 168:2,15 169:2,2 209:2,14 211:25 251:25
**complexation** 209:17
**complexes** 100:17
**complicated** 94:8,11 121:11,14 158:22 183:8
**component** 97:1 261:9 261:12,15,17
**components** 57:4 106:6
**compound** 182:25 184:3 184:24 185:5 187:10 188:19 189:21,23 190:18,21 191:16 192:14,20 196:4 197:1 197:25 198:14 200:4 209:3,4,15 209:17 212:6 213:17,18 244:17,22 245:2,19,25 246:6,15 247:12,23 250:2 253:9 253:25 260:14,14 270:16
**compounds** 118:18 121:2 121:8 237:16 237:25 242:21 244:15 248:16 249:8 251:9 259:14 260:16
**comprehend** 207:6
**conceivable** 181:2 212:9
**Conceivably** 206:12
**conceive** 235:15,23
**concentratio...** 159:4
**concept** 232:7 234:23 249:22
**concern** 251:20
**conclude** 188:24 202:5 202:7 248:20
**conclusatory** 141:22
**conclusion** 28:23 99:5 103:16 147:9 150:8 158:19 175:7 176:9 177:9,12 178:11,17 179:25 180:13,25 181:15 182:6 183:3 184:8 185:10,18 189:3 190:2 191:1,10,21 192:12 193:12 195:16 196:20 197:6 198:4 203:16 245:14,22 246:19 247:5 247:18 248:24 254:23 255:10
**conclusive** 193:7 195:11 196:16 199:14
**conclusively** 191:7 198:14 247:14 270:16
**condition** 99:23
**conditions** 269:11 270:2 270:8,13
**conducted** 16:4
**conference** 132:9
**confidential** 76:13 80:17 81:15
**confirm** 195:22 204:19
**conflict** 36:11 41:6,24 50:24
**conflicts** 50:2 50:8,10,19 51:5
**confused** 62:17
**confusing** 61:19 190:12 190:13
**confusion** 86:17
**congrats** 67:21 68:7
**congratulate** 69:25
**congratulated** 69:10 72:14
**congratulati...** 33:9 68:11 68:16 69:11 69:19
**congratulati...** 73:4
**congratulat...** 33:16
**Connecticut** 1:17 4:4,10 276:3
**connectivity** 269:23
**consider** 25:24 26:17 258:10,15
**considered** 142:8,13 147:19,21 150:11 155:9 201:4
**considering** 149:21
**consulting** 21:19 91:10 105:19
**contact** 118:19
**container** 187:2
**content** 136:16
**contesting** 43:19 102:25
**context** 68:23 70:5,15 83:21 101:14 103:4,11,19 130:7 137:9 139:1 140:18 141:23,23 159:14,16

169:17 186:8 216:15,17 217:20 236:24
**contextualize** 69:24
**continue** 71:12,14 227:18
**continued** 110:7
**continues** 71:18 72:5 122:11 259:8
**controversial** 224:23
**convey** 139:19
**copies** 232:19
**copy** 24:3,7,8 24:8,15 37:2
**Corners** 4:10
**Corporation** 85:6 87:22
**correct** 7:18 9:8 10:13 11:12 21:24 22:5 27:6 29:18 31:25 36:1,7 37:24 38:19,22 39:2,25 40:13,18 42:5,22 44:10,20 45:3,15 46:1 47:2 48:8,18 49:9,13,16 53:1,23 56:19,22 57:12,16,20 57:24 59:9 59:12,15,22 59:25 60:1 60:10,12,13 60:24 61:8 61:11,24 62:20,23 63:5,8,13,14 64:4 65:11 66:17 67:22 68:2,5,9,19 69:13 72:17 73:20 74:5 77:14,25 78:18,22 79:17 84:12 84:21 87:14 88:1,6,25 89:25 90:3 91:8,11,14 92:1 93:16 93:18,21,22 94:1,14 95:12,19 96:19,22 97:3,4,7 98:5 99:9,15 100:1,17 102:3 105:21 106:1 107:17 108:13 109:1 109:5,9,12 109:20,23 110:5,20 111:7,11,21 111:25 112:5 112:21,22 116:2 119:3 119:6,21 120:5,15 121:10 123:1 123:3,5,8,12 123:16,24 124:11,15,24 125:16 127:14 128:16,23 129:1,4 130:9 132:1 132:2 134:6 134:13 135:7 135:8,9,11 136:18,19 137:6 140:13 141:6 144:9 144:13,17,21 145:3,8,17 146:7,14,15 146:18 147:18 153:22 154:24 155:2 155:4,19,23 156:3,6 157:20 158:13 159:3 162:24 163:3 163:9,15 166:23 167:4 169:3 171:11 172:10,14,18 172:22 173:1 173:7,10,11 173:13,21,25 174:8,15,19 174:22,25 175:16,25 176:7 186:5 187:20 189:24 192:1 192:9,25 194:1 196:5 197:3 201:1 201:9 203:14 204:2 207:7 207:13,17 209:5,18 210:7,15 211:11 212:25 213:22 214:11,25 215:13,24 217:24 218:18 219:19 220:12,16,22 221:1,5,10 221:16,22 222:2,7,13 222:14,18,24 223:5,8,14 223:22 224:6 224:16 225:5 225:11,15 226:2,3,6,16 228:2,19,23 228:23 229:7 229:12,22 230:18,22 231:8,14,22 234:4,15 237:4,18 240:4,17,21 241:3,7,19 241:20 242:14,22 243:8,17 244:15,18,23 245:3 246:2 249:9,19,23 250:3,14 252:21,24 253:5,6,10 253:22 254:2 254:5,8,13 254:20 255:17,20,24 256:2,5,8,17 256:24 259:4 259:16 260:18 261:6 261:18 262:1 267:6,18 272:16
**correction** 69:18 275:11
**corrections** 274:5,5,14 275:1
**correctly** 33:21 157:5
**corresponds** 175:15
**counsel** 16:5 43:3 54:25 69:3 85:17 138:4 227:7 237:22 272:13 276:9 276:13,15
**Counsel's** 70:12
**Counselors** 114:21 115:1
**count** 134:10 241:10 266:13
**counted** 134:8
**counting** 196:10 222:4
**county** 274:11
**couple** 8:20 15:23 66:3 170:23 259:1
**course** 106:15 106:20
**courses** 106:4
**coursework** 108:8
**court** 4:21 5:1 82:12 92:19 107:11 133:6 161:11 179:7 187:24

241:24 272:21
**cover** 25:8
**covers** 41:14 41:15 42:3
**COVID** 30:19 30:22
**COVID-19** 134:9
**crazy** 181:22 183:23
**cream** 125:21 126:15
**create** 120:4 223:23
**created** 176:25 178:2
**criteria** 113:17
**critical** 12:7,11 59:2,20 117:20 119:16 120:15 136:23 145:23 146:5 146:6 147:6 150:4,16,25 217:21 231:12 236:18
**cross** 266:18
**cross-exami...** 3:5 267:13 269:19
**crossed** 232:10 235:1
**crossing** 100:12
**crystal** 211:24
**crystallized** 260:23
**CTL** 162:10
**CTLL-2** 162:6 162:12 164:5 164:16 181:21 199:5
**culminated** 79:15
**current** 77:14 78:5 126:25 250:12
**currently** 77:24 127:13
**customs** 68:13
**cutaneous** 3:16 73:19 135:11 138:24
**CV** 77:2,13 78:4 81:6 89:18 110:8 115:4 133:17 133:18 134:11
**cytokine** 55:17 94:10,21 95:22,23 96:2 98:15 115:17 134:25 161:15 167:11 168:6 176:13 186:9 186:10,23,25 194:17,18 206:7,22 207:9 215:12 221:2 250:8 268:1,11
**cytokines** 57:2 91:19,21 93:12,25 94:13 96:4 100:4 135:1 135:15 136:5 136:15 159:5 161:4,9 172:10 222:19 225:1 268:12
**cytoplasmic** 60:17 61:16 61:23 62:22 62:25 63:4 63:11,12,16 63:17 166:4
**cytoplasmic...** 60:23,23 62:4,8
**cytotoxic** 162:8,10,10 170:9,12

**D**

**D** 3:1
**D-E-S-A-I** 224:2
**Damsky** 1:12 3:3,11,15,20 3:20 4:1,9 14:9 49:7 70:9 71:18 72:11,13 73:7 90:20 101:2,24 102:8 103:23 104:18 105:25 113:1 137:25 142:12 232:1 234:22 235:21 236:12 258:24 265:3 272:13 274:2 274:8 275:7
**dash** 145:10
**data** 43:23 99:4 184:16 184:20 199:21 231:15 250:16 269:12 270:7 270:14
**date** 1:14 4:18 10:9 12:7,11 40:23 42:25 53:7 54:13 59:2,20 74:24 75:4 75:11 89:24 90:1 104:6 108:5 112:17 117:20 119:16 120:15 125:15 136:23 137:5 137:14 145:3 145:19,23 146:2,5,6,18 147:2,6,11 147:16,20,21 149:20 150:3 150:4,10,15 150:16,25 151:5,8,11 217:21 231:12 236:8 236:18 268:18
**dates** 110:13 136:23
**day** 21:8,15 71:21 85:24 85:24 103:23 133:20 274:12 276:18
**days** 272:20
**DC** 2:10
**dead** 182:9,14
**deal** 5:20 151:18
**December** 78:22 232:6 233:24 235:4 236:5
**decision** 120:7
**decisions** 117:7 146:2
**deck** 101:10 101:14,18
**declaration** 7:13,17,22 8:17,19 9:4,6 9:18 10:7,13 10:19 11:3 12:16 14:1,6 14:17,25 15:3,12,17 15:24 16:8 16:10,14,20 17:9,25 18:4 18:9,14,17 18:20,25 19:21 20:4 21:3,8,15,23 22:10,21 23:2,22 24:7 24:9,16,22 25:1,13 26:7 27:14 28:3 28:12,18 29:12,22 35:22 37:5 37:15,24 87:19 88:5 88:10,13,18 88:25 89:2 89:13,16 90:5 110:19 121:18,24 129:7 131:20

131:24 132:12 142:8 142:14,19 146:12,20 148:2 149:16 150:14,23 151:19 155:8 164:16 216:19 218:1 218:11,22,25 219:2,10 224:13 226:12,22 231:18 237:1 238:6 257:15 258:9,25 259:22 261:23,24 263:5
**decreased** 199:15,16
**defend** 69:7 82:9
**defense** 141:15
**defenses** 141:4 142:21
**define** 27:8 109:14 207:25
**defined** 139:7
**definitely** 80:13,16
**definition** 118:21,22
**definitions** 138:17
**definitive** 192:1
**definitively** 160:13 181:5 200:3
**degree** 105:25 188:11
**delineate** 153:1,13,17 153:20,21 154:5
**delineates** 152:18
**depend** 159:14 159:16 168:16 182:7 185:1 192:14 199:3 202:24 203:9 213:2
**dependent** 173:17 184:25 185:4
**depending** 109:14 141:9
**depends** 82:2 207:12
**depicted** 56:20 56:21 57:11 57:14 61:2 61:14,24 63:21 94:12
**depiction** 58:2 58:17 100:3
**depicts** 94:2
**depigmentat...** 118:24 248:14
**Depigmented** 116:22
**deponent** 275:7 276:5
**deposed** 4:15
**deposition** 1:12 3:8 4:21 5:11 7:8,16 7:21 8:12,16 8:23 9:2,24 10:5,6,12,20 11:3,11,17 12:1,6,13,22 13:11,14,25 14:5 23:1 25:10 47:7 70:2 86:1 146:4 273:1 276:6,8,8
**derivatives** 229:23
**Derm** 38:12,13 38:15,19,22 39:1,5 44:19 45:15,24 46:1 47:2,16 48:8,17,21
**dermatologic** 3:14 49:13
**dermatology** 3:12,17,18 3:21 30:14 32:12 42:21 45:20 49:11 52:20 53:5 54:2,9,9,18 65:10,18 82:19 90:23 101:16 112:4 112:5,11,20 115:19 116:19 132:9 132:23 224:5 224:9 268:12 268:13
**dermatology...** 38:14
**Dermatolog...** 233:1
**DermView** 224:4,8 232:1,6 233:5,13
**Desai** 224:2,6 232:2,5 234:4 236:5
**describe** 55:25
**described** 58:18 96:1 119:7 149:5 164:3 259:4 259:6 270:3
**describing** 199:24
**description** 3:8 143:9 144:1 239:11
**design** 80:10 80:17 249:18
**destruction** 143:20
**detail** 17:2,5 54:21,23 55:6 184:12 184:14 259:23
**details** 7:24 8:2 9:9 14:3 30:21 54:5 75:24 81:15 86:7 99:12 183:6,13,15 186:1
**determination** 187:18
**determinative** 194:9,12,13
**determine** 157:16 191:7 198:14 269:23 270:16
**determines** 150:4
**determining** 186:18
**develop** 118:20
**developed** 88:19
**developing** 37:7 80:20
**development** 143:21
**diagnosis** 41:11
**Diagnostic/...** 74:18
**dialogue** 71:11
**die** 182:16,24
**difference** 8:16 16:15 16:22 96:1 96:12 106:23 107:6 173:16 217:6
**Differences** 122:12
**different** 28:8 47:20 57:3 62:4,9 70:4,8 86:11 97:14 98:9,15 107:8 139:15 151:8 155:6 157:1 163:17 169:7 173:5 189:11 192:17 201:7 201:11,12 207:4,8 219:25 220:4 222:17,19 224:19,25 238:7 242:13 259:14 260:17 266:18,19 268:14
**differentiate** 56:6

**difficult** 65:1 120:7 238:12
**dimer** 57:5
**diminished** 225:14,19
**direct** 3:4 4:5 133:25 134:5 135:21 136:3 136:24 137:6 137:14 252:17 268:19 269:19
**directed** 237:22 252:2
**direction** 276:10
**directions** 197:20
**directly** 261:11
**disagree** 72:7 94:5,7
**disambiguate** 162:21
**disappointing** 126:22
**disassociated** 210:5,22
**disassociates** 210:13
**disassociati...** 210:11
**disclose** 35:14 36:24 74:17 78:3 79:2 80:9 90:5 91:7,10 105:18 230:11,14
**disclosed** 35:11 89:14 226:16,21 228:15 229:24
**discloses** 229:13
**disclosing** 89:23,24 228:1,18 229:6,21 231:13 254:17
**disclosure** 36:17,21 37:2 271:19 272:1
**disclosures** 34:6,13,17 34:21,25 74:14 105:15 145:7,16
**disconnect** 143:12
**discuss** 38:1 110:19 121:18 135:15 150:18 238:7 238:25 272:15
**discussed** 38:4,8 95:18 134:20 151:4 220:14
**discussing** 36:23 91:13 144:20 148:24 232:2 256:20
**discussion** 138:3 159:13
**discussions** 81:24 146:5
**disease** 32:8 39:22 130:25 138:16,19 168:17 169:6 169:7,8 271:2,5,15
**diseases** 3:22 101:24 249:23 267:25 268:2 268:6,8
**disentangle** 11:15
**dish** 186:24
**dismutase** 140:22,24 141:4
**disorder** 100:14
**dispositive** 181:10
**dispute** 66:16 235:3 236:4
**disputing** 72:13
**dissemble** 72:5
**dissembling** 72:8
**dissemination** 3:13 49:12
**distinct** 161:23
**distinguishing** 250:11
**doc** 52:24
**Doctor** 84:16 267:16 272:9
**doctors** 81:22
**document** 8:20 14:7 42:10 43:5,5 43:20 75:7 75:15 76:9 85:16,17 100:20 104:10 105:23 144:12 162:14 226:4 232:18 259:19,21 261:20
**documents** 11:18 13:25 14:6 99:7 227:2,25 228:17 229:5 229:20
**doing** 63:16 121:12 135:21 136:3 146:16 178:16 180:3 181:19 182:21 192:18 216:8 243:7
**dollar** 21:1
**domain** 61:16 62:19,22,25 63:4,11,13 63:18
**dose** 159:19 184:25 185:4
**double-check** 32:5 97:17 147:4 167:7 231:15 240:22 257:3
**doubt** 53:3 65:15 103:21 104:4
**doubts** 51:11 102:24 103:9 103:13 105:8
**downstream** 92:9,12,15 94:20 159:3 159:5
**dozens** 52:10
**Dr** 3:11,15,20 3:20 14:9 50:8,12,14 50:24 65:17 67:25 69:19 70:9 71:18 72:11,13,14 72:19 73:3,7 90:20 101:2 103:23,25 104:5,18 105:25 113:1 129:16,18,21 129:24 130:8 130:14,15,16 130:23,24 131:2,3,5,8 131:11,12,14 131:17 132:4 132:13,16,17 132:20,21,23 137:25 142:12 224:1 224:6 232:1 232:2,5 234:4,22 235:21 236:5 236:12 258:24 265:3 272:13
**dramatic** 3:16 73:18 185:3
**drawing** 124:23
**drop** 82:16
**dropping** 83:1
**Drs** 130:21 145:8
**drug** 235:12 249:18
**dual** 257:16
**due** 271:2,5

**duly** 4:2 276:3 276:6
**dump** 181:21
**Dunner** 2:9 85:5
**dying** 217:12

**E**

**E** 2:1,1 3:1,7 276:1,1
**earlier** 40:16 41:3 91:25 97:18 111:20 144:20 146:4 158:1 166:3 204:12
**easier** 20:21 208:4
**easy** 207:23 207:25
**eaten** 178:21
**editors** 34:14
**education** 106:3 108:7 108:13
**educational** 94:9
**effect** 96:8 156:16,19 157:13 159:3 191:3 226:25 231:6 248:8 251:21
**effective** 3:10 156:2 157:7 159:21
**effectiveness** 252:2
**effector** 170:9 170:12 225:14,19
**effects** 198:24 199:1
**efficacy** 231:24 235:11
**eight** 111:16 262:4
**eighth** 221:12
**either** 63:4 109:14 123:15 132:16,20 136:3 174:14 175:15 179:14 196:10 276:14,15
**Eli** 74:20
**eliminates** 119:2
**email** 31:17
**embedded** 62:3
**EMD/Millipo...** 74:21
**employed** 120:9,17
**employee** 25:23 26:2,5 26:16 27:25 33:20
**enclosed** 175:21
**encompass** 245:18,24 246:14
**encompassed** 220:11,18 221:13
**encompasses** 172:16,17,25 173:24 223:12
**encountered** 137:10 162:7 176:25 177:25 178:1
**encounters** 86:20
**endocytosed** 205:25 206:13
**Endocytosis** 205:20
**endoplasmic** 167:4,8
**endoplastic** 204:15
**engage** 81:22
**engaged** 76:25 77:24 81:23
**engagement** 84:17
**engaging** 166:4
**engine** 15:14
**English** 94:21
**enhance** 257:25
**enhancing** 258:11
**entails** 81:10
**entangleme...** 83:3
**entire** 66:15,16
**entirely** 61:3 79:20 222:25
**entirety** 16:9 16:19 17:6
**entities** 36:10 36:13 75:6
**entitled** 130:24
**entity** 86:11
**entries** 110:14 115:12
**entry** 136:17 240:3,16
**enzyme** 140:25 176:14,15,19
**enzymes** 141:14 143:19,20
**epidermis** 124:1,5,6,10 124:20,22 125:4,6 127:8,22
**Episode** 233:19
**epitope** 202:22 206:2 207:12 230:6,9,11 230:15,21 231:14 271:20,25
**equal** 46:12
**equitable** 3:13 49:12
**ER** 204:20 205:9
**era** 52:25
**Esq** 2:3,3,8,8
**establish** 69:5
**estimate** 13:18 13:22 18:23 19:9,19 22:15
**et** 144:7 225:2
**etiology** 138:11,17
**evaluate** 28:5 28:20 29:1 35:15 36:9 36:13,16 154:17 187:11 204:8
**evaluated** 29:3 36:5,15 121:16 142:13 150:24 160:20 230:24 258:18
**evaluates** 149:16
**evaluating** 115:15 154:21 186:15 246:23
**evaluation** 28:11,24 146:16
**events** 48:1 119:6
**eventually** 86:23 120:18
**evidence** 98:21
**evolved** 108:19
**exact** 7:24 8:2 9:9 10:9 12:25 13:15 15:20,25 17:19 19:7 30:20 40:23 44:16 48:15 75:11 76:23 85:10 108:5 112:17 113:17 122:8 141:7 200:18 232:14 248:16 258:3
**exactly** 4:18 7:14 9:21 10:3 23:25 26:24 82:2 82:12 94:24 113:5 212:22 219:6 229:10

256:12
**examination** 3:4,6 4:5 268:19 269:19 272:11
**examined** 4:4
**example** 10:15 62:15 126:2 152:4 175:19 181:5 186:11 187:12 195:7 195:24 197:7 198:6 199:4 202:24 223:25 225:5 269:16
**examples** 10:23 197:8 197:23 198:9 198:22,25 207:20 217:25 224:15,21 241:7,18
**exchange** 103:14
**excited** 44:19 55:18
**exclamation** 67:22 73:8
**exclude** 127:8
**excluded** 125:2
**exclusive** 92:24
**exclusively** 247:2 256:2
**Excuse** 13:23 52:7 75:14
**exemplary** 259:3
**exhaustive** 29:24
**exhibit** 3:9,11 3:12,14,15 3:16,17,20 3:20 10:1 16:12 17:4 24:9,12 39:8 39:9,11,19 39:20 41:5 42:12,15,19 42:20 43:25 44:12 45:13 48:24 49:2,7 49:25 51:7 51:10,17,18 51:22 52:2 53:3,9 54:12 58:12 63:24 65:22 67:5,9 67:10,14 73:13,14,18 77:6,13 78:5 90:14,16,20 91:5 93:11 94:6 99:14 100:21,23 101:3 103:1 104:6,11,14 104:18,19 110:8 111:4 115:3 133:5 133:8,13,15 133:16 142:10 144:6 144:6,8 147:3,4 152:6 232:19 238:16,18,21 238:23 240:3 240:16,19,19 240:24 241:1 241:5,21,25 243:1,4,20 247:1 248:16 249:5,7,11 249:17 250:21 251:3 251:11,19 252:6,10,13 253:1,9,16 255:13,14,19 256:1,4,10 259:8,12,18 260:1,11 261:5 263:15 266:4,5,7,9 266:11 269:16 270:3 270:14
**exhibits** 3:8,24 11:5,7,11,19 14:19,24 15:17,20,23 16:1,3,8,19 17:1 226:13 238:16 241:16 242:20 255:20 261:25 262:14,15 263:4,9,21 266:14,22
**exist** 94:4 122:21 164:3 237:20
**existed** 89:15
**existing** 96:24 244:14
**exists** 163:11 214:1
**expect** 162:1 231:10 235:9 254:25 271:8
**expectation** 41:1 120:20
**experience** 267:24
**experiment** 206:22 249:7
**experiments** 222:9 224:15 224:19,25 225:6,8 226:18 252:19,20,22 252:23 254:9
**expert** 23:23 25:16,19,25 26:8,18 27:1 27:16,21,24 28:4,13,19 29:14 36:5 83:24 84:21 85:13 88:4 90:6
**expires** 274:17 276:23
**explain** 96:12 140:4 267:24 271:14
**exploring** 142:1
**exposed** 108:14
**express** 25:21 162:13 164:5 164:17 169:14,20,23 177:25 183:19,25 196:1 218:2 219:12 222:13,15
**expressed** 56:12 60:18 64:24 96:18 162:23 163:2 163:13,14,16 163:19 176:19 205:4 208:5 209:2 210:6 230:23
**expresses** 56:18 167:17
**expressing** 57:15,19,23 57:24 199:7
**expression** 98:20 170:14 221:21
**extends** 40:21
**extent** 50:16 83:17 157:1 158:14 161:25 163:24 167:7 201:25 216:24 231:9 231:24 254:10
**extracellular** 62:19

**F**

**F** 276:1
**F-L-A-V-E-L-L** 128:4
**fabricated** 43:4 69:6
**face** 66:8
**fact** 84:18 96:21 102:18 103:22 104:4 180:7 200:12 200:14 203:14
**facts** 82:10 225:23
**fair** 18:25 20:15 40:20 143:14,22

203:20 208:8 217:10 237:24 240:8
**fall** 112:15 192:15 232:3
**falls** 247:15
**false** 25:5
**familiar** 9:10 16:11,20 58:10 59:9 105:2,4 113:7,18,23 114:1,6 118:6 130:20 136:25 137:10 138:8 138:20 139:2 139:9,16,21 139:24 140:21 149:4 162:9,11,17 163:22 186:15 187:4 202:18 222:9 253:12 258:6
**famous** 254:12
**far** 23:3 40:22 46:23 58:1 145:18 176:21 221:7 223:18 251:12 264:6 266:15
**Farabow** 2:9 85:5
**fashion** 117:9
**fault** 112:23
**Fc-mediated** 225:14,19
**February** 30:23,25 52:21 53:6 53:21 55:7 65:11,17
**feed** 3:11,20
**feeling** 128:1
**fees** 91:10
**Feldstein** 2:8 3:5 6:6 9:19 14:12 15:18 16:24 19:1 19:22 20:14 21:9,16,25 22:6 23:15 26:1,9,20 27:7,18 28:14 29:6 31:5 32:22 34:3,8,23 35:6,17 37:9 39:11 40:6 42:6,14,23 43:8,17,21 44:1,14 45:16 47:3 48:9 49:3,17 49:22 50:15 51:1,13,18 53:24 54:15 54:25 55:10 56:8,13,25 58:19 59:5 59:16 60:25 63:19 65:12 66:1,10,18 67:10 68:20 69:14 70:9 70:18 71:8 71:23 72:7 73:14,25 75:2 77:1 79:9,18 80:7 80:23 81:13 81:18 82:7 82:11 83:6 83:14 84:1,9 84:22 85:15 85:21 86:12 87:3,15,24 89:9,17 90:7 90:10,16,25 96:6 98:6,25 99:10 100:23 103:2,15,24 104:13 105:11 116:7 118:10 120:23 124:25 126:7 127:5,23 128:8 130:18 133:1,13 137:19 140:16 141:16 142:9 142:15,23 143:6,16,23 145:9,25 146:8 147:8 149:18 150:7 150:17 151:1 151:17 152:2 152:9,20 153:3,15,23 154:8 156:14 158:18 159:10,24 160:8,16,25 161:18 164:7 164:18 165:4 165:24 166:15 167:5 167:19 168:4 168:13 174:9 175:5,17 176:8 177:7 177:18 178:9 179:2,23 180:12,23 181:13 182:4 182:18 183:2 183:9,17 184:6,15,21 185:8,16,24 189:2,25 190:24 191:9 191:19 192:2 192:10 193:1 193:10 194:2 194:14,24 195:14 196:18 197:4 198:2,16 199:19 200:5 201:2,10 202:11 203:7 204:3 205:5 205:14 206:5 207:18 208:11 209:6 209:19 210:23 211:22 212:12 213:1 213:7,10,23 214:12 215:1 215:25 216:12,22 218:6,19 219:15 227:5 227:11,15 228:3,20,24 229:8,14 232:11,17,23 233:2,7,16 233:20,25 234:5,11,16 235:5 236:6 237:7 239:19 243:1 244:1 244:6 245:13 245:21 246:3 246:9,18 247:4,17 248:1,6,23 251:3 252:14 254:21 255:8 258:1,13 263:14 264:23 265:2 267:9,14,21 268:17 269:3 269:9,15 270:1,6,11 270:20 271:6 271:13 272:4 272:8,19,23
**fellow** 113:14
**Fibrosis** 3:10
**field** 30:13 95:2 157:23 158:23 247:7
**fifth** 2:4 221:3
**figure** 12:10 18:6 58:12 141:20,21 253:19 262:23
**Figures** 253:16
**filed** 150:2
**filing** 149:10
**final** 266:16
**financing** 35:11,14,16
**find** 11:22 12:1 15:10 33:13 86:25 97:2 126:10 134:11,18 146:20 188:22 189:20 219:1 238:12
**finding** 122:7

135:14
**fine** 25:6 71:12 264:11 265:4 272:20
**fingers** 232:10 234:25
**finish** 31:5 55:1 242:9 260:3
**finishing** 265:4
**Finnegan** 2:9 20:3 21:14 25:14 84:18 85:4
**firm** 84:19,21 84:25 87:13 87:21
**first** 4:2 24:3 30:15,18 31:1,9,13,17 32:11 37:20 40:2 47:23 51:22 52:1 70:16 75:13 76:11,13 86:17,19 101:3 102:6 102:24 109:17 112:3 116:13,17 117:10 128:18 144:15 148:8 155:13,17,21 157:17 173:16 239:2 242:12 253:2 255:13 262:8
**fits** 189:23 190:22
**five** 54:3 77:14 77:23,24 78:8,10 129:8 224:14 238:24 239:5 241:14 259:14,17 272:20
**fixed** 203:1
**Flavell** 128:4,7 128:25 129:3 129:14 130:15,21,23 131:2,5,8
**flier** 44:23
**flip** 90:2
**floating** 210:14
**floor** 264:10
**fluid** 225:1
**fluorescence** 196:11
**fluorophore** 204:24
**focus** 5:13,21 34:15 47:9 47:21 70:6 72:11 108:17 108:21 156:9 247:2
**focused** 15:25 34:18
**follicle** 122:22 122:24 123:7 123:24 124:8 124:24 125:12 127:21
**follicles** 123:22 124:6 127:4
**follow** 16:17 207:4
**followed** 107:23
**following** 196:8
**follows** 4:4 234:21 235:20
**Food** 116:7
**footnote** 88:10 89:8 149:8,8
**forces** 47:1,15 48:7
**foregoing** 274:3,13 276:6,7,11
**forever** 209:8
**form** 15:18 23:19 26:20 48:9 54:15 55:10 56:13 83:6,14 84:1 84:22 85:15 86:12 87:3 98:25 99:10 103:15 120:22,23,25 124:25 126:7 127:5 128:8 130:18 142:15,23 143:6,16,23 145:9,25 146:8 147:8 149:18 150:7 150:17 151:1 151:17 152:2 152:20 153:3 153:15,23 154:8 156:14 158:18 159:10,24 160:8,16,25 161:18 163:21 164:7 164:18 165:4 165:24 166:15 167:5 167:19 168:4 168:13 174:9 175:5,17 176:8 177:7 178:9 179:23 180:12,23 181:13 182:4 182:18 183:2 183:9,17 184:6,15,21 185:8,16,24 189:2,25 190:24 191:9 191:19 192:10 193:1 193:10 194:2 194:14,24 195:14 196:18 197:4 198:2 199:19 200:5 201:2 201:10 202:11 203:7 204:3 205:5 205:14 206:5 207:18 208:11 209:6 209:19 210:23 211:22 213:1 213:7,10,23 214:12 215:1 215:25 216:12,22 218:6,19 219:15 228:3 232:11 233:7 244:1,6 245:13 246:18 247:4 247:17 248:1 248:6,23 252:14 254:21 255:8 258:1,13 261:25 267:19 268:3 268:25 269:7 269:13,24 270:4,9,18 271:3,11 272:2
**formally** 125:3
**formed** 209:15
**forming** 142:19
**forms** 118:13
**Forte** 1:5 4:12 275:4
**forth** 75:24
**forward** 80:1 80:13
**found** 110:24 253:25 266:17,21,22
**foundation** 150:8 232:12 233:17,21 234:1,6,17 235:6 236:7
**founders** 38:15,19 45:25
**four** 51:23 109:15 115:23,25 164:3,10 259:13
**fourth** 163:18 220:24
**friends** 255:15
**front** 17:20 21:4 22:2 24:6,9 100:8

110:11
**fully** 75:23 121:12 124:16 212:7 259:21
**function** 100:19 166:5 166:8 202:15 261:7
**functional** 166:14
**functionality** 254:11
**functions** 225:14,19
**fund** 80:22
**funded** 77:25
**funding** 28:5,7 36:14,25 78:17 79:15
**funny** 102:13
**further** 146:10 272:18 276:5 276:13
**Future** 53:12

**G**

**G-A-M-M-A** 56:15
**G-R-A-N-Z-Y...** 170:22
**games** 85:18 85:23,24
**gamma** 56:15 56:19 57:23 59:12,14 60:4,11 63:2 93:18,24 94:13 97:1,5 97:13,18,23 98:2 100:8,9 100:12,16 158:25 160:3 162:25 163:8 163:13,19,22 166:6 167:12 170:18 171:15,18,20 171:22 172:8 172:9,12,13 174:24 175:16 178:5 194:17 195:8 196:2,2 211:1,4,11 211:14,19,21 212:3,8,18 212:21,24 213:20 214:9 214:19,20 215:10,22,23 218:3 219:5 219:12 220:15,21 221:10 222:1 222:13,14,16 222:22
**Garrett** 2:9 85:5
**general** 10:17 11:1 17:1 33:17 76:11 76:14 95:21 95:25 98:16 125:5 127:25 136:15 143:18 162:15,16 207:14
**generally** 48:23 58:20 60:20 66:25 95:20,24 124:3,12 140:23 163:17 191:22 193:14 217:8
**generated** 124:15
**generic** 159:13
**Genetic** 130:24
**getting** 18:1 178:13,24 181:8 190:4 208:5 215:23 218:14 241:12 262:3
**giant** 12:20
**give** 5:8 6:14 45:19 70:25 71:4,25 93:11 96:11 110:25 126:2 136:6 149:24 183:24 186:11 188:13 194:4 238:11 244:13 262:17 263:1 263:7,10,21 264:1
**given** 54:1 64:15 125:22 224:8
**gives** 192:20
**giving** 197:8 227:3 238:15 238:16,18,21 241:24
**glance** 34:19
**Global** 3:12 38:12,13,15 38:19,22 39:1,5 44:19 45:15,24 46:1 47:2,16 48:8,17,21 49:11 52:20 53:4 54:1,9 54:18 65:10 65:17 132:23
**globally** 138:18
**glove** 165:22 166:10,17
**go** 15:2 24:5 30:1 68:10 69:24 71:1 72:9 74:8 88:9 92:18 101:18 125:6 127:7 134:16 137:20,20 138:13 164:1 164:6 168:22 173:5 181:22 184:23 205:9 205:16 234:20 236:25 242:9 250:18 256:10 260:1 262:22 263:1 263:6,20
**goal** 256:23
**goes** 58:1 179:19 185:6 204:25 251:24
**going** 4:19 6:6 8:15 39:8 48:1 55:17 61:23 65:21 71:11,23 79:8 84:9 85:23 88:14 98:9 101:15 104:13 112:13 116:6 116:9 136:20 139:3 149:15 155:15 164:20 165:11 166:12 170:25 179:10 183:22 187:14 193:24 205:1 205:24,25 208:4,9,15 209:16 227:18,19 228:15 230:1 232:10,17 234:20 235:1 240:13,23 242:10 259:25 261:22
**good** 263:16
**Goodrich** 2:4
**gosh** 89:4 116:25
**gotten** 222:5
**grant** 115:17
**grant/resear...** 105:20
**granted** 111:6
**grants** 115:5,9 115:12,23,25
**granulomatis** 115:21
**Granzyme** 170:22
**graphs** 238:9
**great** 72:21 272:23,24
**ground** 4:19
**grounds** 42:16 51:20 104:16

**group** 96:4 201:24 243:23 268:11 269:17
**grouping** 94:16 96:5
**guess** 11:16 35:8 57:1 82:1 92:17 92:18,20 102:24 172:13 173:15 189:15 196:21 203:17 206:24 208:2 208:22 238:2 240:24
**guessing** 94:23
**guide** 115:18
**Guilford** 4:10
**guys** 102:19

**H**

**H** 3:7
**hair** 122:22,24 123:7,21,23 124:6,8,24 125:12 127:4 127:21
**half** 116:8
**half-life** 258:7
**hand** 276:17
**handed** 39:15 104:18
**handing** 49:2 51:17 67:8 73:12 77:5 144:5 240:9 259:18
**handle** 44:9 45:9 46:4 67:16 68:1 72:25 101:4
**handsome** 51:23 52:14
**happen** 45:21 45:22 181:3 195:11
**happened** 112:14 212:22 232:4
**happening** 8:23 63:7 79:10 127:20 214:23
**happens** 167:7 204:20
**happenstance** 82:25
**happy** 29:24 74:6 120:1 136:15
**hard** 11:15 12:18,19 14:20,21,23 14:24 17:3 17:16,22 26:12,23 51:2 54:4 104:23 140:17 141:19,21 159:12 161:4 162:4 166:12 177:12 178:16 182:11 183:5 183:11 184:10 194:4 209:11
**harder** 44:6
**Harris** 30:4 32:10,11,14 32:20 33:19 33:25 35:24 37:6 38:2,6 38:21 39:2,5 39:25 40:18 40:21 41:23 42:1 46:25 47:14 48:5 52:7,8,13,14 52:21 53:22 54:13 55:8 64:4 73:1 101:21 102:6 102:12 103:25 104:5 131:25 132:4 132:16,20 144:16,20 145:8 231:5 231:5
**Harris's** 53:4 65:10,17
**HarrisVitiligo** 72:20,25 101:7
**hashtag** 101:10,13
**Haven** 1:17
**head** 10:16 17:17 19:5,8 19:11 90:2 90:13 188:16 238:13 243:21
**heading** 41:6 50:1 63:24 105:15
**Health** 114:19
**heard** 113:1 138:23 139:13 142:4 217:17
**hearing** 21:1
**heart** 73:8 241:24
**held** 1:16 29:1
**help** 14:8 229:17 242:24
**helping** 46:7
**helps** 96:7
**Henderson** 2:9 20:3 84:18 85:4
**heterodimer** 57:6
**heterodimeric** 56:22 57:15 162:22
**heterotrimeric** 163:1,6,12
**hi** 13:9
**high** 1:16 96:12 117:23 140:4 166:13 168:14 184:23 186:20
**high-affinity** 211:16
**highly** 64:24 169:20 197:9 197:14
**hired** 86:11 87:2,13,20 90:6
**history** 115:20
**hold** 71:21,24 124:21 135:2
**holds** 37:17 165:23 166:11
**homeostasis** 168:17,22,23 169:7,9 216:11,21 217:7,8,11 218:4 219:13
**Honestly** 18:15 19:23
**honor** 113:6
**honors** 110:9 110:15
**Hotel** 1:16
**hour** 20:8,9 48:18 116:8
**hourly** 21:18
**hours** 13:16 13:21 17:8 17:24 18:3,9 18:13,17,20 18:24 19:4 19:10,13,14 19:18,20,24 20:4,10,22 20:25
**human** 251:16
**HuMax** 251:18 256:18 257:1
**HuMax-IL-15** 251:25
**hundred** 15:16 15:23 18:13 19:18 20:22 20:25
**hundreds** 16:19 226:12
**hybridization** 115:18
**hydroquinone** 119:24
**hypothesis** 138:20 139:3 139:9,10 141:8,13 142:25 143:25 257:14

**hypothetical** 176:22 177:13,24 178:18,23 180:2 184:17 192:3 210:16 214:4,5,7 269:5
**hypothetically** 192:6
**hypotheticals** 269:11

**I**

**I-N-C-Y-T-E** 75:14
**idea** 39:4,4
**identification** 39:10 42:13 48:25 51:8 67:6 90:15 100:22 104:12
**identified** 16:2 226:4 249:8 259:15 266:15
**identifies** 50:6 149:10 259:12
**identify** 16:6 34:25 122:1 133:23 136:1 137:14 176:13 202:19,22 203:4 226:14 236:20 238:3 240:15 241:5 242:20 251:15,19 255:4
**identifying** 35:3 140:12 155:14,18 259:2 261:5
**identity** 255:22
**IFN** 93:18,20
**IL-15** 15:9,9 41:15 42:4 57:15,19,22 58:3,13 60:22 61:11 62:5,13,24 63:3 64:24 65:1 93:22 93:24 94:13 95:10,15 97:2 98:19 98:23 134:17 135:21 136:3 136:9,13,16 136:24 149:4 156:2,3,10 156:13,17,20 156:23 157:2 157:15,19,25 158:16 159:3 159:9 160:7 160:15,18,24 161:8,9,14 161:16,25 162:1,13,19 162:22 163:1 163:11,20 164:2,5,10 164:11,17,21 164:24 165:12,13,14 165:18,18,23 166:5,11,11 167:2,10,15 167:16,25,25 168:6,6 169:1,16 171:1,2,4,6 171:14,15,17 172:15,21,25 173:1,25,25 174:4,5,7,7 174:15,15,18 175:4,4,13 175:15,21 176:4,16,16 176:19 177:1 177:2,5,6,25 178:3,8 179:4,14,15 179:22 180:10,10,21 180:21 181:11,11,20 181:22 182:2 182:3,11,17 182:25 183:19,25 184:1,5,10 185:5,7 186:12,16,16 186:21 187:11,12,12 188:7,13,18 188:18,20,20 188:23,23,25 188:25 189:5 189:6,10,10 189:11,13,14 189:14,16,16 190:20,23,23 191:16,17,18 192:7,19,23 192:24 193:18,22 194:10,10 195:12,12 196:3,17,17 196:24 197:2 197:2 198:1 198:15,15,24 199:2,7,11 199:17 200:4 200:14 201:18,22 202:1,4,6,10 203:6,6 204:13 205:8 206:7 208:3 208:17,17 209:1,4,21 209:21,24 210:5,11,13 210:14,19,20 210:22 213:12 216:4 216:9,19,25 217:15,23 218:5 219:3 219:11,25 220:1,5,25 221:2,4,9,15 221:20 223:20 224:22,22 225:3,4,9 226:8 231:9 231:21,21,25 232:8 234:24 235:21 236:13,20 237:3,3,17 237:18 239:1 239:1 242:21 243:25 245:11,11 246:1 247:14 247:15 248:17,21,21 249:1,9,23 250:1,8,12 251:10,10,18 251:25 252:3 253:20 254:4 256:16,17,24 256:25 257:7 257:8,16,23 257:25 258:7 258:10,12 259:3,3,15 259:16 260:5 260:5,8,18 261:12,18 268:23,23 269:23 270:17,17 271:8,9
**IL-15's** 215:9
**IL-15-induced** 178:24 179:18 180:8 180:20 181:9 199:13 245:19 246:7 246:16 247:24
**IL-15A** 192:7
**IL-15R** 56:14 56:18 58:16 58:24 59:4 59:25 60:8 60:14,16,22 61:6,12,15 63:10,16 149:5 189:5 190:20 204:13,22 206:18 210:19 225:9 250:3
**IL-17** 98:10,14 98:16,20,24 135:22
**IL-2** 93:16,24 94:12 97:2 100:7,12,17 134:17

135:21 136:3 137:3,6,7,15 169:20,23 171:8,19 254:1,7 260:14,17 261:9,15
**IL-21** 97:6 172:6
**IL-4** 95:21,22 96:18,25,25 97:9,15,22 97:23 98:4 171:18,21
**IL-7** 97:6 172:1
**IL-9** 97:6 172:4 172:5
**image** 56:2 57:10 59:11 64:3
**imagine** 76:22 79:3 100:2 141:8 169:17 176:14,18 209:22
**immune** 58:3 98:18 99:21 130:25 138:24 163:13,16,20 166:22 271:16
**immunity** 96:15,16 114:2
**immunodefi...** 99:18,20 100:16
**immunologi...** 108:19
**immunologist** 128:5 129:19 130:17
**immunologi...** 96:3 129:10 129:13 130:15
**immunology** 105:1,2,10 106:4,6,8 108:8,9,12 108:15,16 113:19 114:13 115:24 116:3 129:9
**immunostim...** 95:23
**immunosuffi...** 222:24
**impact** 142:20 211:1
**impacted** 182:10
**impair** 6:17
**impeachment** 232:22
**implied** 57:25
**implies** 35:20
**import** 224:19
**important** 4:24 5:13 7:2 35:13 47:9 70:2,5 103:19 146:2 147:19 149:20 150:10
**impressive** 226:13
**imprisonment** 25:6 27:15
**improper** 70:17,21,25 71:25
**inaccurate** 14:22 33:7 72:9 79:21 81:20 86:5
**inappropriate** 70:13
**inauthentic** 43:3
**include** 7:12 24:18,20 27:24 39:23 165:14 243:15 269:11,21 271:1
**included** 3:24 7:25 10:13 10:18 125:25 224:21 269:22
**includes** 171:2 171:5,14 172:22 223:4 223:7
**including** 109:3 125:23 268:9 274:4
**inclusively** 125:14
**inconclusive** 182:3 192:22
**incorporated** 226:5 227:2 227:25 229:5 229:20 240:20 241:2 241:18 262:16,20 263:6,8,12 266:16,23 267:5
**incorporation** 187:5 240:25
**increase** 98:20 185:4
**increased** 268:24
**Incyte** 74:21 75:10,12,16 75:18,21,25 76:4,8,15,17 76:25 77:11 77:17,18,25 78:11,14 79:2,7,15,25 80:20 81:8 81:17,23 82:6,15,18 83:3,17,23 83:25 84:5,7 84:17,21,23 85:6,14 86:11,17,19 86:24,25 87:10,22 88:5,20,24 89:3,7,15,23 90:6 91:8,11 105:19,20
**Incyte's** 87:13
**independence** 27:24
**independent** 23:23 25:16 25:19,25 26:8,12,18 27:1,4,9,16 27:20,24 28:4,13,19 29:14 36:4 36:14 173:17
**independently** 16:4 28:25
**indeterminate** 185:15
**indicate** 191:17
**indicated** 251:10
**indicates** 190:19
**individual** 52:6 52:15 54:6 131:21
**individuals** 52:3 115:22 117:7
**induce** 123:20 252:1 257:8
**induced** 98:4 118:13,17 121:4
**induces** 98:24
**inducing** 62:10,12 271:10
**induction** 223:20
**industrial** 118:3,5,8
**infections** 99:22
**infer** 199:16
**inflammation** 169:10,11 223:23
**inflammatory** 3:22 130:25
**information** 3:14 12:11 14:18 25:2 49:13 80:17 141:10 156:24 177:11 225:21
**inhibit** 97:12 98:2,4 157:2 158:2 161:21 175:13

187:13 202:1 202:4 203:9 203:12,13,25 209:24 213:12,12 226:8 251:10 256:25 257:24 258:10 260:16
**inhibited** 161:25 199:17 231:9
**inhibiting** 158:3 161:8 161:8,14,15 188:7 191:13 191:16 196:15 215:12 216:4 254:12
**inhibition** 3:9 115:16 157:14,14,24 194:8 210:1 220:20,24 221:3,8,12 223:20 244:14,20,25 245:5,10 246:12 248:17 250:1 253:20,24
**inhibitor** 3:17 73:20 125:15 135:8,11 156:2,9,13 156:22,23 157:2,19 158:16 159:5 159:8,17 160:2,7,14 160:23 161:10,16 162:2 165:12 171:1,4,14 172:17,19,21 172:22,25 173:1,12,13 174:3,3,4 178:7 179:4 179:21 180:10,21 181:10 182:2 182:12,17 183:1 184:5 184:10 185:7 186:16 187:21 188:4 188:24 189:7 189:9,12,13 189:14,16 190:22 191:18,23,25 192:8,21,23 193:3,8,9,15 193:19,25 194:10,20,23 195:1,4,5,12 195:18 196:17 197:2 197:16,17 198:1,15 200:4,14 203:6 210:20 215:14 221:16,20 222:1 223:3 223:13 224:22 225:3 231:21 236:13,20 239:12 240:3 240:16 241:17 245:12 247:9 247:14 248:21 254:5 254:7 257:17 260:5,6,8,9 260:15 261:2 261:6 270:17 271:8 272:7
**inhibitors** 3:18 39:21 91:14 101:23 125:23 126:3 127:14,16 149:4 156:25 157:12 161:21 162:3 171:2,6,15 172:16 213:5 237:3,17 238:8 239:1 239:7 241:7 242:21 249:9 250:6,12,12 259:3,15 260:23 268:24
**inhibitory** 159:4 173:24 174:14 175:3 175:9,13 177:3 178:2 179:5 180:19
**inhibits** 156:16 158:9,12 161:2,3 174:4 177:2 188:20 189:5 189:21 190:19 197:25 202:5 202:9 204:1 231:24 245:19,25 246:6,16 247:12,23 249:1
**initiate** 97:16
**initiated** 77:22 78:2
**initiates** 60:16 63:4 97:19
**initiating** 61:16
**Innovation** 233:13
**Innovations** 233:6
**inside** 58:5 62:4,6,9 154:5 173:20 176:16 208:10
**insist** 71:18
**insofar** 58:17
**instance** 176:1 181:20 200:11 221:15
**Institute** 49:16 114:19
**institutions** 29:8
**instruct** 70:22 70:24
**instruction** 70:19,25
**instructions** 70:12 71:3 72:1
**instructs** 6:21
**integrated** 108:9
**interact** 31:10 32:14 208:17 210:21 211:13
**interacted** 30:18 31:18 132:22
**interacting** 31:1 211:18 211:20 212:7 215:7,8,15 215:15,17
**interaction** 187:13 193:16,21,24 194:18 206:19 207:16 209:22 211:10,17 212:8 214:19 214:22 219:25 220:4 220:7,15,21 220:25 221:4 221:9,14
**interactions** 31:13 81:4 82:25 103:6
**interacts** 211:4 212:3 212:4,5,18
**interest** 41:7 41:25 50:2,8 50:11,19 136:14 259:25
**interested** 135:22 136:8 239:6 276:16
**interesting** 235:22
**interfere** 211:9
**interferes** 188:22
**interfering** 206:2 214:19 215:9

**interferon** 93:20,24 94:13 158:25 160:3 170:18
**interleukin** 98:10 134:12 134:14,17 222:17
**intern** 109:5,8
**International** 49:19 110:14
**internship** 109:18
**interpret** 226:18
**interpreted** 193:3,7
**interpreting** 189:13
**interrupted** 212:10
**interview** 232:1,6 235:14
**interviewed** 130:8
**interviewing** 140:10
**interviews** 224:9
**intrafollicular** 124:5
**introduce** 192:20
**introduced** 31:14,19
**introduction** 52:12
**invasive** 268:15
**invention** 152:8,18 153:14,22 154:6 249:22 250:1
**inventor** 50:14 52:8 68:17 69:10,20
**inventors** 34:1 35:25 39:25 41:10 42:3 43:6,16 68:4 101:22 144:17 242:7 242:10,12 255:23
**investigate** 216:19 218:2 219:9
**investigated** 218:10,15 219:1
**investigating** 219:18
**investigative** 42:21 77:22 113:8
**investigators** 29:9,17,20
**invited** 102:5
**involved** 83:16 83:16,19 84:7,8,24 86:24 87:10 87:11 100:4 129:23
**involvement** 129:20 132:15,19 250:24
**involves** 11:13 76:19
**involving** 83:24
**issue** 37:18 94:3 144:9 230:24
**iterations** 165:14

**J**

**J** 1:18 2:8 4:2 275:2
**J-U-R-A-T** 274:1
**JAAD** 49:16,18 49:19 50:12
**Jad** 2:3 4:11
**Jak** 3:9,17,18 39:21 60:17 61:16 63:4 73:19 91:14 91:25 92:4,9 92:21,23 97:15 101:23 125:15,23 126:2 127:13 127:15 135:8 135:10 156:19,22,25 157:1,2,12 157:13,24 158:2 159:5 159:17 160:2 161:20 162:2 198:23
**JAK-STAT** 91:22 92:6 93:13,25 94:10,14 95:11,16,17 98:11 160:19
**JAK1** 58:9,10 58:13,20,25 59:4 60:4 92:12,17 93:2 95:19 158:3,9,12 159:2 212:10 213:22 214:11,23 215:24 216:10 217:2
**JAK3** 58:9,10 59:8,9,11,15 60:1 92:15 92:17 93:6 95:19 97:19 97:24 98:4 212:11 213:21 214:10,24 215:23
**JAKs** 159:6
**January** 40:5,8 40:11 41:1 46:23 47:12 48:4
**janus** 115:15
**JEH** 41:9,22
**Jessica** 2:8
**Jill** 67:25 68:16 69:10 69:19 72:14
**Jillian** 30:3,7 30:12,15,18 31:3,10,13 31:24 32:3 32:15,19 33:5,9,24 35:23 38:9 38:18,25 39:24 40:18 40:21 41:21 42:1 45:7,12 45:13,25 46:15,24 47:1,13,15 48:5,7 49:8 50:5 52:18 53:5 67:22 144:16,19
**Jillian's** 39:4
**JMR** 41:9,20
**job** 11:13 12:17 189:22 190:21
**John** 30:4 32:10,11,14 32:20 33:19 33:25 35:23 37:6 38:2,5 38:21 39:1,5 39:24 40:17 40:21 41:23 42:1 46:25 47:13 48:5 52:7,8,13,14 52:21 53:4 53:21 54:13 55:8 64:4 65:10 73:1 101:21 102:6 102:12 131:25 144:16,20
**joined** 47:1,15 48:7
**joint** 50:11 102:2,4 145:7
**journal** 42:21 113:18,21,23 114:1,4,6,9 114:12,15
**journals** 34:14
**June** 110:2 112:14
**juxtaposition** 200:21

**K**

**K-A-E-C-H** 128:21
**Kaech** 128:18

128:19,20,22 129:14 130:14,21 131:11,14,17
**KD** 186:13,18 187:18,19,20 188:3 190:18 192:21 209:11
**keep** 116:6,8 149:15 238:12,20 239:22 240:11
**keeps** 69:3
**kids** 3:19
**kinase** 115:15
**kind** 83:13 102:13 118:4 119:20 128:6 165:21,22 183:8 224:15
**kinds** 238:8
**kinetics** 209:10
**King** 101:24 102:7
**knockout** 222:10,12
**know** 3:19 8:15 10:10 11:8,9,14 13:9 14:3,4 14:24 18:2,2 18:5,11,11 18:15 19:3 19:17,24 22:8 23:3,11 28:2 29:23 30:12 33:5,8 35:7,20 44:4 56:7,11 60:2 60:16 66:2 69:7 76:2 81:2,11,15 81:16,16 82:5 86:25 93:12 97:22 98:23 99:12 102:19 112:16 113:5 113:16 114:17,20,23 114:25 118:8 118:12 125:1 129:16 130:19 134:17,23 142:5 150:20 156:24 157:13,13,24 158:22 162:6 165:3,8 166:18 168:10 170:11 173:6 177:15 180:1 181:19 182:2 182:16 183:25 185:1 186:8 187:6 188:14 189:22 190:21 196:15,16 197:1 201:16 203:13 204:23,25 205:19 206:22 207:3 207:4,25 214:4 216:9 224:1,3 228:7 230:25 231:1 235:10 239:3 243:21 249:12 262:19
**knowing** 7:23 141:23 181:3 187:22
**knowledge** 7:15 25:4,4 28:16 29:16 32:2 142:2 274:6
**knowledgea...** 126:11
**known** 58:21 59:17,20 94:4 119:4 120:21 121:3 121:8 138:25 160:19 170:15 198:24 199:1 203:15 204:9 226:8 248:7 248:13 249:2 259:5

**L**

**L** 2:8
**lab** 46:13,16 107:19 128:22,25 129:6
**labeled** 56:14 56:15 77:10
**labels** 58:5,8
**laboratory** 128:10
**labs** 128:15
**lack** 121:3,9
**lady** 45:6 52:17
**language** 56:5 143:2 152:25 176:6 189:9 189:11
**large** 16:25
**late** 41:4
**laugh** 102:18
**launch** 47:2,16 48:7
**Launching** 52:25
**law** 84:19,21 84:25 87:13 87:21
**layman's** 99:19
**leaving** 65:25 124:18 195:4
**lecture** 3:12 49:12
**left** 66:9 197:12
**left-hand** 45:2 144:24
**legal** 103:16 146:17 147:9 150:8 158:19 175:6 176:9 177:8 178:10 179:24 180:13,24 181:14 182:5 183:3 184:7 185:9,18 189:3 190:1 190:25 191:10,20 192:11 193:11 195:15 196:19 197:5 198:3 245:14 245:22 246:19 247:5 247:18 248:24 254:22 255:9
**lesions** 115:21
**lesser** 188:11 254:10
**let's** 33:1 59:8 62:16 85:8 99:14 121:17 133:4 135:19 135:24 136:11 137:20 154:20 157:4 158:3,15 164:1,24 166:25 168:21 176:18 178:20 185:3 186:7 187:12 207:2 212:3 217:5 224:11 226:10 236:25 240:24 241:21 242:25 243:4 249:5 250:17 252:6 255:13 256:10 266:13
**level** 17:2,4 76:12,14 95:21,25 96:4,9,12 98:16 117:23 140:4 148:24 161:22 166:13 186:20 204:6 217:2 259:23
**license** 37:17
**light** 116:22 123:12

**likewise** 25:10
**liking** 102:15
**Lilly** 74:20
**limitation** 245:11
**limited** 173:9
**limiting** 252:1
**line** 148:3 162:8,9 199:7 243:9 250:19 251:8 252:18 256:13 259:12 262:4 262:8,11 275:11
**lines** 64:19,19 165:7 243:5 249:12,14,17 250:23 262:3
**list** 29:24 74:14 77:14 78:8,10 93:12,16,18 93:22 98:10 110:8 111:5 112:2 133:5 133:12,23 136:22 137:4 188:13 198:7 237:16 259:13 261:25 262:14 264:3
**listed** 42:25 77:9 79:22 111:16 148:2 173:19 221:7 242:21 244:15 263:4 263:13
**listing** 251:9
**lists** 49:7 234:4
**literature** 7:9 7:11,24 8:2,4 8:10,11,13 9:1,3,7,14,16 9:25 11:4,14 12:2,15,16 15:5,7,8,10 15:14,15 16:3,6 37:1 60:3,6,19 93:9 125:13 141:11 144:3 157:22 201:19,21 202:2,4 204:8 208:13 218:8,12,17 219:10 258:8
**little** 5:6 16:15 62:16 104:23 121:20 122:19 190:4 224:11 242:5 245:20 246:1 246:7,16
**LLP** 2:9 85:5
**localized** 118:1
**located** 61:7 61:10 124:3
**location** 210:20
**lodges** 6:21
**log** 187:23
**logo** 53:16
**long** 13:13 130:19 174:10 262:25
**long-lasting** 235:18 236:2
**look** 10:25 12:16 13:24 29:25 41:5 49:25 52:19 53:9 65:5 76:3 77:2 87:4 88:9 89:6 91:4,16 99:14 126:8 133:4 134:16 146:22 147:23 148:3 148:8,12 149:7 150:20 152:7 153:6 154:20 155:7 170:14,17,18 170:19 199:2 199:14 201:25 236:14,25 239:3 241:21 242:7,24 243:4,9 249:5,11 250:17 252:6 252:16 253:16 255:13 258:8 258:24
**looked** 10:11 10:18 11:2,6 11:10,23,24 12:11,12 14:5,15,16 14:19,20 36:3 136:21 152:24 153:5 253:24 269:18
**looking** 40:2 43:25 51:22 52:1 77:3,7,8 111:4,13 112:2 115:3 137:4 152:11 173:15 177:15 184:20 192:19 198:23 200:1 225:1 232:8 234:23 235:17,18,25 236:2,12,20 237:9 239:23 242:7,9,9 244:12 245:8 251:8 253:19 260:13 263:12,14 264:2
**looks** 58:15 74:1 133:2
**loss** 271:1,4
**losses** 271:1
**lost** 124:21 190:4 212:14 240:12
**lot** 8:5,5,7 11:5 11:13 12:2 14:19,20 16:1 29:8 38:23 47:5 47:18,19 50:18,18 54:4 65:20 76:19 82:17 94:3 103:4,6 108:15 126:2 135:15 161:3 161:3 218:24 266:18,19 268:18
**low** 217:9
**lower** 187:20 187:22 188:1 188:3
**LSR** 1:18 4:3
**lymphocyte** 162:8,10

**M**

**M-E-D-Y-C-Z...** 255:17
**M-E-L-A-N-O...** 139:6
**M-O-R-F-E-A** 32:9
**M-O-R-P-H-...** 39:22
**M.D** 1:12 3:3 4:1 49:7 108:25 109:4 274:2,8 275:7
**magnitude** 210:1 246:12
**mailing** 4:9
**main** 108:20
**maintain** 125:4 219:13
**maintained** 218:4
**maintenance** 217:16,23
**majority** 9:3
**making** 102:2 117:6 125:10 142:8,13 169:1 232:13 260:15
**manuscript** 40:4,8 134:20
**March** 3:18 30:23,25 67:21 68:16 69:9,18 72:14 90:23

101:6,21 102:3 104:20 105:18
**Marcus** 108:1
**mark** 2:8 39:7 39:8 263:20 263:22
**marked** 3:8 24:9 39:9,15 42:12 48:24 51:7 67:5,8 73:12 90:14 100:21 104:11
**marking** 232:18
**mass** 186:25
**Massachuse...** 1:7 4:14 23:10,13 25:16,24 26:3,6,17,19 27:5,10 28:1 28:6,9,21 29:2,5,10,18 29:21 30:11 32:17 33:6 33:11,20 35:24 36:6 46:19,22 68:18 69:13 69:22 72:16 275:5
**material** 9:11 9:13 25:20
**materials** 10:11,18 11:10 238:13
**Math** 20:14
**matter** 4:12 23:7 25:22 131:9,18,22 132:1 136:9 142:2 151:15 178:22 227:6 251:20
**mature** 124:2
**MBEH** 119:24 120:3 121:4 121:10,12
**Mdm2** 260:9 261:2,14,17
**mean** 8:1,4,7 8:13 9:9,12 9:21 10:14 11:13,20 12:14,18,19 13:4,4 14:2,7 14:19 15:7 17:16 21:4 24:2 25:18 27:16 29:7 32:16,23 36:2,21,22 37:10 40:23 45:18 50:16 61:1 62:13 63:20 66:19 76:9 81:23 81:25 83:20 87:9 94:20 94:22,23 95:6 104:7 113:13 132:8 138:14 141:17 143:7 149:19 150:9 152:14 153:4 154:9 156:12 161:2,20 163:23 165:6 166:1 175:19 176:22 177:23 181:1 181:8 182:7 184:16 187:1 189:4,14,15 190:3,11 191:2,11 194:7 195:6 196:6 197:7 197:19 198:5 201:20,23,24 203:5,23 204:4 209:8 210:4,18 211:15 213:11,25 216:24 217:1 240:11 256:20 257:12
**meaning** 27:13 158:17 186:9
**means** 82:3 101:18 143:14 168:23 178:14 204:8 244:4 257:6
**meant** 8:10 139:18 235:8
**measure** 187:15 196:7 196:9
**mechanism** 119:4 121:12 128:2 138:15 138:16 141:5 157:24 167:1 167:15,24 168:11 271:17
**mechanisms** 127:10 205:16
**media** 102:20
**medical** 3:17 8:4 9:14,16 9:25 15:8,10 15:14 36:25 46:7 68:9 90:23 109:8 109:17 116:18 117:2 117:4,6,7
**medication** 121:15 161:3 184:24
**medications** 6:16 39:21 231:23
**Medicine** 113:2,4
**MedPage** 73:23
**Medyczny** 255:15
**meet** 12:21 13:5,10,13 30:15
**meeting** 3:18 3:21 14:10 32:13 66:9 82:19 83:1 90:24 101:17 103:5 132:5 132:7,9
**melanocyte** 121:19,20 122:3,15,19 123:6,21 124:7,19 125:3,11 127:3,20
**melanocytes** 123:23 124:2 127:2 271:16
**melanocytor...** 139:2
**melanoma** 137:8,9
**member** 113:13
**membrane** 61:7,10,15 61:21,22 163:3,9 166:22 167:18 168:2 169:3
**membranes** 96:19
**memory** 18:22 85:8 86:2,8 87:8 235:16 235:22,24
**mention** 87:20 88:4 89:2 121:25 134:8 134:11 146:23
**mentioned** 32:10 33:23 86:23 130:11 148:7 169:6 220:6
**messenger** 179:14
**met** 13:19 30:19 32:11 129:25 130:3 130:7
**metabolism** 141:1
**method** 120:14,17
**mice** 3:10 222:10,12 231:5
**Michael** 2:3
**microbes** 107:9
**microbiology** 106:21,24

107:4,7,9
**micromolar** 253:21
**middle** 64:6 67:14 105:14 260:19 262:3
**midmorning** 13:19
**midway** 123:4 144:23
**migrating** 124:9 127:22
**Mills** 2:3 3:4,6 4:6,11 6:12 9:23 14:14 15:21 17:7 19:6 20:2,16 21:12,21 22:3,9 23:18 26:4,14,25 27:11,22 28:17 29:11 31:8 32:25 34:5,11 35:2 35:9,21 37:12 39:7 39:14 40:10 42:9,17 43:1 43:11,18,24 44:2,3,17 45:23 47:6 48:16 49:1,6 49:20,24 50:21 51:9 51:16,21 54:7,22 55:2 55:16 56:10 56:17 57:7 58:23 59:7 59:19 61:4 63:22 65:14 66:6,13,22 67:7,13 68:24 69:17 70:16,22 71:16 72:4 72:10 73:17 74:3 75:3 77:4 79:13 80:2,15 81:5 81:14 82:4,8 82:24 83:11 83:18 84:15 85:2,19,25 86:15 87:6 87:18,25 89:11,19 90:8,19 91:3 92:25 96:10 98:8 99:6,13 101:1 103:7 103:20 104:1 104:17 105:13 107:14 116:5 116:10 118:16 121:1 125:7 126:9 127:11 128:3 128:11 130:22 132:25 133:3 133:8,10,15 133:18,21 137:17,20,24 140:20 141:25 142:11,18 143:1,10,17 144:4 145:13 146:3,11 147:14 149:22 150:12,22 151:6,20 152:5,12,22 153:8,18 154:3,11 156:18 159:1 159:15 160:4 160:12,21 161:6,13 162:5 164:14 164:23 165:10 166:2 166:20 167:13,22 168:9,20 174:12 175:11,23 176:12 177:14,22 178:19 179:3 179:9 180:5 180:17 181:7 181:18 182:13,23 183:7,14,20 184:13,19 185:2,13,21 186:3 188:2 189:8 190:7 191:5,14,24 192:5,16 193:5,17 194:6,21 195:2,19 196:23 197:11 198:8 198:20 199:22 200:9 201:5,14 202:14 203:11 204:11 205:11,18 206:9 207:22 208:14 209:13 210:3 211:2 212:1 212:16 213:4 213:8,14 214:2,16 215:5 216:6 216:16 217:4 218:9,23 219:17,23 227:9,13,17 227:21 228:9 228:22 229:3 229:11,15 232:15,21,24 233:4,10,12 233:18,23 234:3,8,13 234:19 235:2 235:13 236:3 236:10 237:9 237:13 239:21,24 243:3 244:3 244:9 245:17 245:23 246:5 246:13,22 247:10,20 248:4,11 249:4 251:4 252:15 255:2 255:12 258:5 258:17,23 263:16,18 265:5 267:8 267:19 268:3 268:25 269:7 269:13,24 270:4,9,18 271:3,11 272:2,10,12 272:18,24
**mind** 62:2 116:16 170:24 198:10,12 210:10 231:16 247:9 265:3
**Miner** 1:18 4:2 275:2
**minimal** 81:4
**minimum** 245:9
**minute** 234:14
**minutes** 133:1 267:10
**misdirecting** 71:9
**misleading** 227:16,17
**misrepresent** 71:13
**misrepresen...** 71:17
**missed** 239:4 266:20
**missing** 198:19
**misstates** 9:19 19:1 48:10 83:7 84:2 90:10 99:1 118:10 127:23 151:2 159:11 165:5 177:18 180:25 182:19 183:10 185:17 194:15
**mistake** 136:4
**mixture** 243:16
**MNRA** 176:2
**mode** 60:7 158:24 163:5

219:8 258:15
**model** 123:25 125:5 127:6 127:12,16 139:23 143:3 143:13,18 223:19
**Models** 130:25
**modulating** 95:8
**molecular** 106:16 107:1 107:5 134:25 138:16
**molecule** 95:3 95:7,11,15 178:15 180:2 180:7 207:16 208:23 211:8 212:20 213:3 214:1 215:6 236:13 238:25 239:6 239:15 241:7 241:14,17 249:19
**molecules** 107:1
**moment** 42:11 64:4 133:11 136:6 176:15 212:4 238:14
**money** 23:10 79:25
**monobenzyl...** 119:24
**monoclonal** 200:21,23,25 202:21 203:3
**mononuclear** 243:12
**month** 30:21 66:4 109:25 112:10
**monthly** 48:18 48:21
**months** 8:21 48:19
**morass** 240:12
**morning** 13:3 13:8
**morphea** 3:11 32:9 33:23 39:22
**mouse** 222:12
**move** 107:21 108:3 124:10 258:19
**moved** 80:1 107:19
**moving** 64:8 80:13
**mRNA** 175:20
**multiple** 77:9 201:7 224:8 225:6
**multiplication** 20:19
**mutual** 31:20

**N**

**N** 2:1 3:1
**N-U-T-L-I-N** 260:7
**name** 4:7,11 24:13 37:13 139:19 186:14 198:18 275:22
**named** 276:5
**names** 110:25 242:4,6,17
**narrative** 268:4
**national** 110:15 113:2 113:4 114:19
**native** 96:24
**natural** 115:20 122:3,14,18 127:3 168:24 168:25
**naturally** 96:24 168:21
**necessarily** 35:20 45:17 56:23 201:16 201:17 202:9 203:5,19
**necessary** 6:11 155:10 176:16 177:25 191:7 225:22 226:17 228:14
**need** 7:3 14:16 39:7 69:1,5,7 72:11 74:9 81:15,16 82:9,10 103:11 116:5 155:14,18 156:24 159:22 183:15 184:14 186:1 197:23 206:24 228:6 247:2 249:18 252:17 257:10 258:20
**needed** 271:24
**needs** 4:21 71:4,6
**negative** 187:22
**neither** 207:3 276:13
**nerves** 138:24
**neuro** 138:20
**neutralization** 252:3
**neutralize** 256:16,24
**neutralizing** 257:7
**never** 171:23 176:19 178:3 178:21 213:20
**new** 1:17 2:9 3:19 10:11 52:25 159:20 249:18
**News** 3:21
**NIAID** 114:23 115:1
**night** 227:20
**NIH** 114:17,21
**nine** 111:5 221:18
**NKG2D** 247:22 248:8,19
**nomenclature** 155:6 257:4
**nonacademic** 34:25 35:4 36:25
**nonblocking** 202:22 204:22 206:17
**nonhuman** 107:10,11
**nonresponsi...** 228:11
**nonspecificity** 161:23
**norm** 212:12
**normal** 124:13
**normally** 21:18 124:13,20
**Nos** 67:5
**notable** 161:23
**Notary** 4:3 274:16 276:2 276:17,22
**note** 84:9
**noted** 5:10 274:5
**notice** 134:23
**November** 1:14 73:22 74:24 75:5,9 76:8,24 79:1 274:4 276:18 276:24
**nowadays** 123:17
**nuance** 94:3
**nucleic** 173:24 174:14 175:3 175:9,13,14 175:18,20 176:24 177:3 177:3 178:2 179:5,13,20 179:21 180:20
**nucleotide** 174:4,6 175:2 221:16 221:20,25
**number** 10:1 12:20,25 13:15 15:20 15:25 16:25 17:19 19:4 21:4 22:1 24:12 134:24 144:25 145:5 145:6,20

221:25 237:5 237:11 238:7 238:11 262:17,19 263:7 266:15 267:1 268:13
**numbering** 251:5
**numbers** 18:21 19:8 22:14 91:17 145:15 238:19 263:15 266:19,19
**Nutlin-2** 260:7 260:16
**Nutlin-3** 261:2
**NW** 2:9

**O**

**oath** 27:14 85:3,9 274:13
**oaths** 276:4
**object** 6:6 15:18 20:14 26:20 39:11 42:14 49:3 51:18 54:15 55:10 56:13 67:10 73:14 83:6,14 84:1 84:22 85:15 86:12 87:3 90:16 98:25 99:10 100:23 103:15 104:13 124:25 126:7 127:5 128:8 130:18 142:15,23 143:6,16,23 145:9,25 146:8 147:8 150:7,17 151:1,17 152:20 153:3 153:15,23 154:8 156:14 158:18 159:10,24 160:8,16,25 161:18 164:7 164:18 165:4 165:24 166:15 167:5 167:19 168:4 168:13 174:9 175:5,17 176:8 177:7 178:9 179:23 180:12,23 181:13 182:4 182:18 183:2 183:9,17 184:6,15,21 185:8,16,24 189:2,25 190:24 191:9 191:19 192:10 193:1 193:10 194:2 194:14,24 195:14 196:18 197:4 198:2 199:19 200:5 201:2 201:10 202:11 203:7 204:3 205:5 205:14 206:5 207:18 208:11 209:6 209:19 210:23 211:22 212:12 213:1 213:7,10,23 214:12 215:1 215:25 216:12,22 218:6,19 219:15 227:9 228:3,10 232:11,17 233:7,8 244:1,6 245:13 247:4 247:17 248:1 248:6,23 252:14 254:21 255:8 258:1,13 269:24
**objecting** 43:3 69:4 232:23
**objection** 6:21 9:19 16:24 19:1,22 21:9 21:16,25 22:6 23:15 26:1,9 27:7 27:18 28:14 29:6 32:22 34:3,8,23 35:6,17 37:9 40:6 42:6,23 43:8,17,21 44:14 45:16 47:3 48:9 49:17,22 50:15 51:1 51:13 53:24 56:25 58:19 59:5,16 60:25 63:19 65:12 66:1 66:10,18 68:20 69:14 70:19 73:25 75:2 77:1 79:9,18 80:7 80:23 81:13 81:18 82:7 82:11 85:22 87:15,24 89:9,17 90:7 90:25 96:6 98:6 103:2 103:24 105:11 118:10 120:23 127:23 140:16 141:16 149:18 152:2 152:9 177:18 227:10,12 233:2,11,16 233:20,25 234:5,11,16 235:5 236:6 245:21 246:18 267:19 268:3 268:25 269:7 269:13 270:4 270:9,18 271:3,11 272:2
**objections** 39:13 49:5 67:12 70:17 71:2 73:16 85:20 90:18 100:25 192:2 198:16 228:20,24 229:8,14 246:3,9
**objectively** 25:20
**obligated** 6:22
**obliged** 227:5
**observed** 231:7
**observing** 179:18
**obtained** 248:21
**obtaining** 267:23
**obviously** 71:25
**occur** 48:17 141:6
**occurs** 124:22 125:10 127:1 127:1 167:15
**October** 9:7 24:22 37:16 78:21,25 89:25
**off-label** 91:14
**offensive** 72:9
**offer** 71:2 150:13
**offered** 225:20
**offering** 151:12
**office** 1:1 82:1 82:16
**officially** 68:8
**Oftentimes** 65:20
**Oh** 24:3 31:7 64:10 89:4 102:23 116:25 238:20
**okay** 6:3,13,19 7:1,7 8:19

10:17 15:22 20:20 23:9 24:8,20 29:12 30:7 32:10 43:25 48:2,3 52:19 55:5,19 56:5 60:15 61:13 62:1 63:2,10 65:9 71:22 72:7 74:10 80:3 83:22 87:4,11,19 88:11 89:12 91:6 92:3,11 95:5,10 98:22 99:7 100:15,20 101:2 102:12 102:23 103:21 104:10 105:6 107:5 108:3 108:24 112:23 115:25 116:11,12 117:1,10 122:18 129:16 133:4 134:2 135:13 136:6,17 137:17 144:15 148:5 148:6,13 152:15 153:9 154:20 164:1 164:3 165:11 175:2,12 176:21 179:10 180:6 181:23 185:3 187:9 188:3 188:6,9 189:18,20 190:11 191:6 193:6 195:20 195:25 196:14 197:12,22 200:10 201:6 201:15 205:19,21 206:12 207:2 207:11,15 208:18,20,21 208:25 212:17 215:20 216:7 216:8 217:10 221:8 226:10 231:20 232:16 238:6 238:17 240:8 240:13,23 241:14,22 242:7,18 244:12 248:15 249:16 251:7 253:18 256:14,23 257:15 258:6 259:7 260:10 263:23 264:4 264:9,13,17 264:19,21 265:7,9,11 265:11,16,17 265:19,21,23 266:2,6,8,10 266:12,12 272:8

**on-off** 209:9 210:9

**once** 124:20 196:15

**one-hour** 48:21

**one-off** 195:6

**one-size-fits...** 143:8

**ones** 30:1 56:14 116:3 136:15 188:14 209:23 263:25 264:5

**online** 38:13 40:4,8 104:20

**open** 195:4

**operates** 96:21

**opinion** 99:8 151:12 155:13,17,21 155:25 156:22 161:7 175:12 230:20 231:3 231:20 237:22 243:22 254:4 254:19 257:12 271:23

**opinions** 9:5 9:16 16:14 25:21 145:23 146:13 147:16 149:24 150:13 151:9 151:21,22 154:16 189:12

**opportunity** 64:15 72:21 272:15

**opposed** 10:7 247:8

**opposite** 59:24 214:17

**order** 99:2 102:9 218:16 257:11

**ordinary** 59:3 59:21 148:25 151:13,24 155:23 217:22 236:19 270:15 271:24

**organism** 222:23

**organisms** 96:17 107:12

**organization** 104:24 130:5

**organize** 45:19

**original** 3:24

**originating** 127:2

**outcome** 276:16

**output** 187:19

**outside** 124:17 154:6,10,12 176:20 177:1 178:1 208:6 269:1

**overactive** 169:10

**overexpress...** 249:23

**overlap** 255:23

**owned** 26:18

**owner** 1:7 2:7 25:15 27:5 75:21

**ownership** 75:24

**oxidation** 141:5

**oxidative** 139:24,25 140:3,6,12 141:2,12,14 142:21 143:5 143:7,13,20 223:13,19,21 223:24 270:22

**oxygen** 141:1

**P**

**P** 2:1,1

**P-E-R-F-O-R...** 170:23

**P-H-I-A** 46:4

**p.m** 137:22,23 219:21,22 258:21,22 267:11,12 273:2

**page** 3:2 10:2 24:13 40:2 41:5 49:25 51:22 52:1 53:9 54:12 58:12 63:23 65:5 67:15 73:2 74:14 77:7,8 78:4 81:6 88:9 91:4,17,17 100:3 101:3 105:14 110:13 111:4 111:13,17 112:2 115:6 115:6,15 122:11 135:4

135:5 136:5 136:17 144:15,23 241:8 242:25 243:5,9 244:12,13 249:5,11,14 250:17,18,18 250:19,23 251:2,3,5,6,8 252:17 256:10,13 259:1,7 260:19,20 263:4 274:5 275:11
**pages** 74:8 241:9 259:1 260:1
**paid** 23:19 87:17
**pandemic** 30:20,22
**paper** 32:1,3 33:23 46:24 47:13 48:4 141:9 230:18
**papers** 34:13 240:12
**paragraph** 25:13 110:22 110:23,25 121:25 122:5 122:9 129:7 146:22 147:23,25 148:3,4,8,12 148:17,20,22 149:8 155:7 155:9 251:1 256:22 257:21 258:25 259:2 259:7 261:23 261:24 263:5
**parameter** 186:13
**parameters** 182:8 238:4
**parasitic** 96:17
**part** 12:17 30:17 47:23 76:14 94:8 106:3,14 108:13 109:16 116:24 121:23 122:21 123:2 128:15 132:11,23 136:16 148:2 151:19 152:6 186:22,23,24 222:17 228:10
**participated** 31:20
**particular** 58:13 92:11 92:14 119:22 136:16 146:18 150:3 154:22 165:9 197:24
**particularly** 152:17,25 210:12
**parties** 28:8 86:21 276:14
**partner** 76:20
**partners** 35:1 35:4
**parts** 155:6 162:20
**party** 4:13 23:13 83:2 87:1
**patches** 116:22,22
**patent** 1:1,3,7 1:9 2:7 7:10 15:4 25:15 26:18 27:5 29:1 34:1 36:1,3 37:8 37:17 39:25 41:10 42:3 43:7,16 50:6 50:14,25 52:9 68:5,17 69:11,20 90:9 101:22 144:7,8,12 144:17 145:5 145:6,14,17 145:24 146:14 147:7 147:13,17,23 149:5,11,17 149:25 150:1 150:4,15,24 151:10,15,25 152:8,11,19 153:2,10,13 154:7,18,22 155:11 160:15 202:2 224:12,16 225:10,25 226:5,16 227:1,24 228:16 229:4 229:19 230:11,14 240:20 241:2 241:19 245:9 245:18,24 246:14,24 254:20 259:4 259:6,11,15 262:17,20 263:13,13 266:16,24 267:6 271:8 272:1
**patentability** 146:13 147:17,22 149:16,24 150:14 151:9 151:25
**patentable** 150:1,25
**patents** 20:1
**pathogenesis** 138:9,15,21 139:3,11 140:8,15 141:3 143:4
**Pathology** 113:8,24
**pathway** 91:22 92:6,10 94:20 95:11 95:16,17 96:8 137:1 137:11 160:19 162:1 189:7,11,14 213:12 222:21 268:24
**pathways** 94:11,15 95:14,19 222:18 268:1
**patient** 116:14 116:17,21 117:11,14 118:3,19 119:25 120:5 120:10,14 126:14,19,20 126:24 157:8 248:2 254:18 255:5
**patients** 3:10 99:21 100:13 100:15 117:5 117:16,19 120:12 121:22 137:8 232:9 234:24 268:6,8
**pay** 80:5
**paying** 23:13 78:14 80:22
**pays** 23:4,6
**PBMC** 243:8 243:23 247:1 252:11
**PBMCs** 243:10 243:11,13,16 243:20 247:12 248:18 252:19 253:2 253:3,21 254:1
**penalties** 25:10 27:15 29:13
**pending** 7:3 237:8
**people** 29:8 33:16 44:23 47:5,18,20 51:4,23,24 52:11 54:4 54:10 81:25 96:7 103:4,6 107:8 119:19 128:14 129:6 130:10 140:8

160:1 170:3 170:19 197:19 230:25 242:17
**peptide** 173:13 208:23
**percent** 244:18,18,20 244:23,23,25 245:3,3,5,20 246:1,8,17 253:22 254:2
**percentage** 178:14 208:9
**Perforin** 170:22
**perform** 78:14 142:20 187:10 199:23
**performed** 28:11 134:5 186:21 226:11
**performing** 188:17 201:15
**period** 78:21 78:25 169:9 209:17
**Peripheral** 243:12
**perjury** 25:11 29:13
**permanent** 120:18,20
**person** 6:19 45:21,22 46:3 54:2 59:3,21 64:3 140:14 151:13,23 155:22 217:22 236:19 238:12 270:14 271:23
**personalized** 3:21
**personally** 274:12
**persons** 38:21
**petitioner** 1:5 2:2 4:12 85:5
**Pfizer** 74:18
**Ph.D** 1:12 2:8 2:8 3:3 4:1 49:8,8 68:1 107:16 108:8 108:13,17 267:17,22,23 274:2,8 275:7
**pharmaceuti...** 75:20 81:21 236:22
**phosphoryla...** 198:23 199:15,16,24 200:1
**phototherapy** 123:13,15,20
**phrase** 27:12 85:10 166:19 170:2
**phrased** 28:2
**phrasing** 189:16
**physically** 107:20 211:20 221:14
**physician** 120:3 140:10
**physician's** 109:17
**physicians** 109:7 119:18 126:23
**picture** 35:8 45:2,5 61:12 61:25 62:1 65:9 102:13 102:14
**pictures** 44:23 51:23
**piece** 37:11
**pigment** 119:20 120:4 124:14,15
**pigmentation** 119:2 121:4 121:9 271:1
**pin** 161:5 162:4
**pink** 56:2 57:18
**place** 89:22 152:17,24 153:5 225:2 232:3 238:10
**places** 91:8,11 201:13
**plastic** 186:23 186:23 187:1 187:2
**plausible** 163:25
**play** 85:24 140:3 234:20
**played** 234:21 235:20
**playing** 85:18 85:23
**plays** 140:25
**pleasant** 99:25
**please** 4:7 41:5 47:21 49:25 53:9 71:1 85:20 91:4,16 133:11 139:5 179:8 241:11 249:11 258:24
**PMEL** 170:5
**point** 5:25 9:8 14:13 23:25 42:8 54:16 67:22 73:8 80:1 89:13 89:23 90:4 110:7 119:9 130:2,12 132:15,19 135:17 136:15 142:1 150:18 151:8 151:22 152:25 182:2 188:24 189:22 190:20 193:8 193:25 196:15,16,25 197:15 212:17 229:18 230:1 231:11 235:21 247:7 257:19 260:1 260:19 263:17
**pointed** 227:3 228:1,18 229:6
**pointing** 147:12
**points** 152:17 260:13
**Polish** 269:17
**polyclonal** 200:12,13,16 200:18 201:7 201:16,21,23 202:3,9
**populate** 123:6
**population** 217:12
**portion** 124:3 179:13
**portrayed** 141:8
**POSA** 149:3
**pose** 36:11 71:6 72:6
**position** 226:19
**positive** 169:25 170:3 170:6,12 217:16,24 243:14,15,20 243:24 247:2 247:22,22 248:9,18,19
**possibilities** 12:20 198:7
**possibility** 124:19 125:2 127:9 163:18 191:12 195:5 215:4
**possible** 17:23 17:24 18:3,8 18:16,19 19:10,12,14 19:16,17 21:6,13 23:12 26:15 61:13 65:25 79:12 81:23

82:15 150:23 185:22 188:8 188:9 203:1 216:3 266:20
**postdoc** 128:16 129:3 129:4
**postdoctoral** 129:9
**postdoctorate** 128:12
**posts** 3:15
**postulated** 140:2
**potency** 156:25
**potential** 35:15
**pound** 72:21
**powerful** 188:3
**PPIs** 260:13
**practice** 34:12 34:16 35:19 36:24 48:20 109:7
**practicing** 157:9 247:25
**praise** 130:16
**pre** 12:11
**pre-2017** 137:2 137:5
**pre-critical** 136:22 137:5 137:13
**pre-date** 137:12
**predictable** 155:22
**prediction** 97:25 216:3
**predictive** 243:24
**predominant** 60:6 128:2 158:24 163:5 166:8 167:1 167:15,24 168:11,18 254:14 258:15
**premarked** 77:5 144:5 238:15
**preparation** 8:12 9:2 10:12 12:5 132:11
**prepare** 7:7 12:21 13:11 13:14,25
**preparing** 7:16 7:21 9:4,24 10:4,19 11:2 11:11,17,25 12:13 14:5 15:2,11 17:8 17:25 18:4,9 18:13,17,20 18:24 19:20 20:4 21:3,23 23:1 80:3 131:20,24 258:9
**presence** 187:11 202:22 276:9
**present** 39:5 65:16 130:1 151:16 152:1 166:5 203:4 249:21
**presentation** 54:12 63:12 63:15 90:22 91:13 102:3 102:4 116:20 126:1 140:11
**presentations** 48:22 125:22 126:2 130:12 224:5
**presented** 38:22 39:1 126:5 140:19 168:2
**presenters** 38:24
**presenting** 60:22 62:13 169:2
**Presently** 125:19
**presents** 120:2
**press** 74:2,4 74:11 166:12
**prevent** 98:3 207:12 212:6
**prevented** 214:8
**preventing** 207:10 215:18,21
**prevents** 3:9 176:24 178:13 212:20
**previously** 36:24 84:20 85:1 87:20 90:6
**primary** 165:7 226:15 227:3 228:1,18 229:6,13,21
**principles** 146:17
**print** 104:15
**printed** 254:17
**printout** 44:12
**prior** 16:9 28:12 83:15 84:24 86:10 86:24 88:4 108:17 111:13 120:15 137:9 150:5 201:19 201:21 216:18 218:11 250:11
**probably** 17:17 18:12 18:18 31:17 56:4 68:11 73:1 97:25 103:5 108:6 130:13 132:5 132:22 170:24 182:21 194:19,22 195:1,3,18 199:3 236:23
**problem** 169:12
**proceeding** 34:2
**proceeds** 5:11
**process** 168:18
**produce** 37:2
**produced** 168:7
**produces** 167:16,24,25
**producing** 167:2
**professional** 110:15
**professor** 68:9 69:22
**professorship** 72:16
**program** 109:13
**proinflamma...** 250:7,8,13
**project** 78:21 78:25 79:4,5 80:12
**proliferate** 184:1 196:3
**proliferating** 124:9 127:21 181:23 182:1
**proliferation** 178:5,24 179:1,19,19 180:4,8 181:9,20 184:4,23 185:4 187:8 187:9 195:23 196:4,5,7,8 196:10,14,25 198:1 199:12 199:13 217:7 217:8,11 242:22 243:8 243:22,24 244:14,17,21 244:22 245:2 245:6,10,19 246:1,7,16 246:25 247:24 248:17 252:11 254:1 269:5
**promoted** 33:16
**prone** 169:14

**pronounce** 41:11 242:17
**pronouncing** 128:20
**proof** 232:7 234:22
**proportion** 243:19
**propose** 77:20
**protect** 96:15 96:16 143:19
**protects** 99:22
**protein** 175:21
**proteins** 92:8 92:9,21,22 92:23 93:1 157:1 161:22 170:15,17 198:24
**protocol** 64:7
**provide** 13:17 70:15 87:21 146:10 199:21 209:12 261:24
**provided** 146:13 151:9 224:18
**provides** 226:6 241:17
**providing** 68:22 241:6 259:13
**provisional** 144:24 149:11
**public** 4:3 35:15 140:11 274:16 276:2 276:17,22
**publication** 31:25 32:8 33:19 34:7 39:20,23 42:1,24 43:15 50:5 50:11,12,22 51:12,15 105:9 133:22 136:18 147:12 254:17
**publications** 34:22 35:5 35:10 133:5 133:12,24 134:4,8,13 136:22,23 137:2,4,5,13 269:17
**publish** 34:13 34:17 47:24 50:17
**published** 11:18 30:4 32:1,3 40:8 40:11,16,25 42:20 43:6 43:23 46:24 47:12 48:4 48:12 49:15 49:21 104:19 104:25 133:25 146:25 147:3
**PubMed** 15:13
**punishable** 25:6
**purple** 73:8
**purpose** 34:21 34:24 35:3 123:19
**purposes** 232:21
**pursuing** 110:4,6,7
**put** 181:25 186:22
**putting** 12:15 105:7 169:1 188:18 264:9

**Q**

**qualified** 276:4
**qualify** 189:6
**qualifying** 160:6,14
**quantify** 196:12
**question** 5:14 5:15,21,22 6:1,4,22,23 7:2,3,4 14:23 16:23 21:11 29:3 31:6 42:18 43:14 47:8,9,21,23 48:1 51:25 55:17 61:6 61:19 62:7 66:14 68:13 68:14 69:1,2 69:3 70:4,6,7 70:11,23,24 71:4,20 75:4 77:10 84:6 85:22 86:2 88:3,15 94:19 97:14 103:10,12 104:2 127:18 136:1,21 137:3 140:12 142:17 152:23 154:4 154:14 155:16 157:17 159:20 161:24 164:2 164:4,6,13 164:15,20 165:20 172:20,24 174:11 179:2 179:8,10 183:16 186:17 190:12,13,15 193:9 195:8 200:3 202:16 202:17 203:1 208:15 211:17 213:15 216:18 218:8 218:13,16 223:18 226:9 227:8,22 228:7,11,12 229:1,25 230:3,6 237:7 239:2 240:13,14,25 242:10,12 246:6 247:11 252:7,9 253:1,2 254:24 255:3 255:14 258:19 260:3 260:7,10 261:14 262:13,21,24
**questions** 5:12,13 11:6 44:7 66:25 67:1 70:3,10 71:6 72:6,12 86:2 112:25 138:6 158:15 183:12 261:23 263:11 267:15 269:4 272:14,18
**quite** 146:9 153:25 226:13
**quote** 122:13 122:14 232:7 250:6 251:20
**quotes** 74:4,12

**R**

**R** 2:1 276:1
**R10** 245:2
**R12** 244:22
**radiation** 123:16
**random** 86:20
**range** 268:8
**rapidly** 184:1
**rarely** 120:6
**rat/mouse** 225:13,18
**rate** 20:6 21:18 22:20,24 184:23 209:9 210:9 217:11
**rates** 217:9
**reaching** 154:16
**reactions** 141:14
**reactive** 141:1
**read** 12:2,4 17:5 42:8 50:17 152:14 249:13 250:18 259:24 260:2
**reading** 85:7 87:5 141:18

152:15 225:16
**ready** 132:25 137:17
**real** 43:5 84:13
**realize** 36:2
**really** 99:3 120:6,7 158:21 162:4 178:22 181:8 247:6
**reask** 75:4
**reason** 6:13 65:15 275:11
**reasonable** 217:14
**recall** 28:8 30:19 31:16 31:19 32:13 33:9 40:23 50:23 65:25 67:1 97:20 108:12 116:17 117:4 117:11,15 119:14 131:1 162:7 166:7 188:15 204:17 219:16,18,20 220:9 232:2 232:5 235:14 257:18,23 268:20 269:6 269:18 270:23 271:21
**receive** 108:7 112:7,10
**received** 28:5 28:7 36:14 79:25 106:1 109:4 111:9 111:24
**receiving** 28:8 69:12 105:20
**receptor** 57:4 57:12,15,19 58:14,21 59:12,14 62:3,6,25 64:20 94:24 96:18,22,25 97:2,5,10,13 97:15,19,23 100:8,9,12 100:17 156:3 156:17 162:13,18,19 162:23 163:2 163:7,11,14 164:2,6,17 164:22,25 165:13,13,14 165:19,22 167:10 168:1 168:15 169:14,20,23 171:1,2,5,6,8 171:14,15,18 171:19,21 172:5,9,16 172:21,25 173:25 174:5 174:8,15,18 174:19,21,24 175:4 177:6 179:15 180:11,22 181:11 182:3 183:19,25 186:10,16,22 188:18,25 189:10,14,17 190:23 192:24 194:11,19 195:12 196:17 197:2 198:15 199:7 199:11 203:6 206:8 209:21 211:4,5,19 215:13 216:10,20 218:3,3 220:1,5 221:2,22 222:1,7,13 222:22 224:22 225:4 225:9 231:21 237:3,18 239:1 245:12 247:15 248:21 250:3 251:11 257:16,24 259:3,16 260:5,15 261:10,12,15 261:18 268:23 270:17 271:9
**receptors** 56:11,19 59:24 62:13 62:19 63:3 97:3,6 100:16 164:10,11 166:6 175:22 211:15 260:18
**Recess** 67:3 137:22 219:21 258:21 267:11
**recited** 153:12
**recites** 171:13
**recognition** 113:16
**recognitions** 110:9,16
**recognize** 7:23 90:20 144:6 146:1 234:9 259:19
**recognized** 149:1,6
**recognizing** 18:21 20:24 52:10 75:23 95:13 185:25 223:9,15 231:23 266:17
**recollect** 136:9
**recollection** 20:7 29:24 75:8 78:19 86:3,9,10 87:9 117:13 117:18
**record** 4:8 11:25 12:12 62:18 71:10 83:7 84:10 90:11 103:11 135:25 137:21 226:21,23 272:19
**recorded** 4:21 228:17
**Recross** 272:10
**rectangular** 56:2 57:18
**recuse** 64:11
**red** 55:20,21 55:22 56:7,8 56:9,12,18 57:8,10,14 58:5 61:11 61:22,24 63:7,13,17 100:11
**Redirect** 3:6 272:11
**reduce** 221:20 250:6,13
**reduced** 276:10
**reducing** 221:15,19 250:14
**refer** 12:19 57:5 129:14 138:22 139:17 146:7 146:23 211:23
**reference** 12:18 135:5 135:10 136:5 141:7 146:24 147:3 163:24 165:2 226:5 227:2,25 228:17 229:5 229:20 231:4 231:6,16,17 240:20 241:2 241:19 242:19 256:12 257:10 260:4 260:12 262:16,20 263:7,8,12 266:16,24 267:5
**references**

20:1 135:17 238:4,24 239:4 241:15 242:14 262:18 267:1 267:4
**referred** 11:16 171:19,23
**referring** 57:2 77:12 79:1 92:3 114:18 118:15 139:1 144:12 145:16 147:11 170:3 210:9 223:25 236:14 238:9 239:13 256:18 258:3
**refers** 147:2,6 147:10 200:17 201:24
**reflect** 195:7
**reflective** 244:8
**reflects** 16:14 237:21
**regard** 68:7 136:17 162:14
**regarding** 13:6 26:18 31:13 50:25 115:10 131:21,25 151:9,14,24
**Regardless** 178:22
**regional** 110:15
**registered** 42:8
**regular** 170:4
**regulatory** 169:21,22,25 170:7
**reiterate** 94:16
**relate** 115:10 140:7,18
**related** 9:4 15:8 43:12 79:3,5 108:20 116:1 116:4 138:4 218:20 249:23 268:10 276:14
**relates** 106:25 138:15,18 218:24 250:1
**relationship** 32:15 36:6 75:10,25 76:2,4,7,15 79:2,15 81:7 81:10,17 82:2,6,21 83:13 84:4 86:18 88:24 89:14,23 105:19 128:6
**relationships** 36:10 74:17 74:25 75:5 138:25
**release** 74:2,4 74:11
**relevance** 39:12 42:15 49:4 51:19 67:11 73:15 90:17 100:24 104:14
**relevant** 7:9,11 7:25 9:16 70:14 153:7 163:25 165:1 239:9 248:14 268:1
**reliably** 243:23
**relied** 216:25 261:25 262:14,18 266:14
**Relke** 147:3
**reluctant** 84:16 85:12 86:6
**rely** 201:19 203:15
**remaining** 120:3
**remember** 4:18 7:14,23 8:2 9:9,22 10:3,9,14 11:4 12:5,25 13:15 14:2,3 14:21 15:19 17:3,10,16 23:8,16,17 23:20,21,24 24:24 28:10 30:3,16,20 31:1,11,12 31:22 32:12 33:21,22 34:9,20 36:18 37:4 37:22 39:6 42:7 44:16 47:8 48:15 51:3,5 54:5 54:21 55:15 65:19,21 67:2,23 75:11 76:6 76:16,23 81:25 82:13 85:9,10 86:7 87:16 89:4 89:10 90:1 90:13 102:9 106:5,7,12 106:19,22 108:5 112:12 116:13,25 117:12,22 119:17 120:11,16 126:3 132:5 132:6 137:16 224:10 229:10,23 232:4,13 259:23
**remembered** 55:14 104:8
**reminds** 54:12
**remove** 120:3 223:21
**removing** 119:20
**render** 257:11
**repeat** 10:21 86:14 142:17 174:11 190:15 227:22 228:25 260:10 263:3
**rephrase** 88:15
**repigment** 122:14
**repigmentati...** 120:19 121:17,21 124:22 125:9 126:19 127:1 127:17,19,20
**repigmenting** 122:2
**reply** 67:25 73:3
**repopulate** 123:22 124:1
**repopulation** 127:2
**report** 150:11
**reported** 190:18
**reporter** 4:22 5:1 92:19 107:11 133:6 161:11 179:7 187:24 241:24 272:21 275:2
**reporting** 253:20
**represent** 4:12 55:21
**representative** 272:6
**representing** 174:7
**reproduce** 123:22
**requested** 237:24
**required** 71:9 146:17 211:16 217:2 245:10
**research** 3:15 8:6,8,9 28:5 28:7,21 29:5 52:25 91:7 107:23 108:22 109:13 115:10 128:10,15

133:25 134:5 135:21 136:3 136:24 137:6 137:9,15 268:10
**researching** 267:25 268:12
**reserve** 39:13 42:16 49:4 51:20 67:12 73:16 90:18 100:24 104:16
**reservoir** 121:19,20 122:3,14,18 124:7 125:11 127:3
**reside** 123:10
**residency** 109:13,19,22 110:1,3 111:10,24 112:8,13 117:3 130:1 130:4,8
**resident** 109:12 130:5
**respect** 175:15 268:23 270:7
**respond** 70:3
**responded** 140:11
**responding** 82:20
**response** 68:14 73:19 101:7 235:16 235:24 243:25 252:1 257:9
**Responses** 3:16
**responsibilit...** 71:13,17
**responsive** 5:15 47:10 71:5
**responsively** 262:25
**restate** 240:14 255:1
**result** 143:21 228:8 247:8 271:16
**resulting** 271:9
**results** 126:21
**retained** 25:14 84:18,19,20 85:4,13
**reticulum** 167:4,8 204:15
**reveal** 76:12
**reverse** 120:22 121:3,9 251:21 256:11 257:5 257:13
**review** 7:16 9:25 11:18 16:9 34:6,12 36:18 60:3,5 60:19 74:6,9 88:7 93:9 98:21 99:4 115:11 125:13 133:11 134:2 141:11 163:23 165:1 177:10,20 208:12 218:7 218:12,17 223:24 232:20 235:19 242:23 250:16 257:10 259:21 265:4
**reviewed** 7:9,9 7:20 8:13 9:15 12:14 15:4,4,6,8,11 16:6,7,18 17:1 19:25 20:1 41:24 50:10 226:12 237:25 238:5 267:7
**reviewing** 11:13 34:16 34:18 81:3 99:7 133:22 150:19
**Richard** 128:4 128:7 129:3 129:14
**Richmond** 30:3,7,12,15 30:18 31:3 31:10,13,24 32:4,15,20 33:5,10,25 35:23 38:10 38:18 39:1 39:24 40:18 40:21 41:21 42:1 45:7,12 45:14,25 46:25 47:13 47:15 48:5,7 49:8 50:6,12 50:14 52:18 53:5 68:1,16 69:10,20 72:15 73:3 132:13,17,21 132:23 144:7 144:16,19 145:8
**Richmond's** 46:16 50:8 50:24 72:19
**rid** 180:8,20 221:21 222:1 222:6,22
**right** 9:18 14:10 20:20 52:11,14 55:22 63:23 66:7 68:15 68:15 85:12 87:7 98:22 101:19 102:14,16,21 108:11 125:8 126:6 134:9 134:21 136:1 139:8 146:25 153:5 154:1 155:5 165:3 172:13 198:10 206:4 206:15 207:5 212:2 215:8 216:8 227:4 236:16 239:14 240:1 240:6 257:21 260:20 262:12
**right-hand** 45:5 50:1 51:24 52:2 63:23
**RNA** 115:17 179:14
**road** 4:10 119:9
**Roberts** 2:8
**role** 115:15 139:25 140:3 140:6 141:1
**room** 102:15 102:19 124:18 272:15
**Rosati** 2:4
**Rosato** 2:3
**rotation** 116:19
**rough** 133:19 272:23,24
**roughly** 217:13 245:7 254:3
**roughs** 272:22
**round** 56:9
**RPR** 1:18
**rubella** 115:20
**rule** 21:22 22:4 22:8 30:5 61:2,5 157:21 160:5 160:13
**rules** 4:20
**ruling** 157:18
**run** 54:19
**running** 76:19
**ruxolitinib** 125:21,24 126:14,18,24 157:4,8,19 158:6

**S**

**S** 2:1 3:7
**S-E-E-M-A-L** 224:1
**safety** 231:24 235:11

**sample** 82:16 83:1
**Sarah** 1:18 4:2 275:2
**sarcoidosis** 3:16 73:19 115:16 135:11
**satisfies** 159:23
**satisfy** 245:11 254:19 255:3 255:6
**saturate** 65:1
**saw** 82:18
**saying** 9:1 27:3,15 28:3 28:12,18 65:25 69:6 79:6 85:9 87:11 147:25 148:14 149:25 169:22 190:14 193:6 193:23 194:22 195:3 195:21 199:18 201:6 202:3,6 205:24 206:25 213:5 213:9 216:7 218:12 230:25 235:15 239:16 248:12 250:13 252:7 256:15 259:11 266:22
**says** 25:7 40:7 41:6,9 45:9 53:12 63:24 64:7,20 73:7 78:10,11 88:22 91:21 94:4 101:10 101:22 102:12,14 105:15 144:24 155:20 165:12,13 170:25 171:4 172:15,19,21 172:24 174:13 189:9 192:21 199:9 233:1,5,13 233:19,24 240:7 250:24 251:6 260:14 260:23
**scenario** 62:2 168:16 176:23 178:7 179:12 180:18 182:22 183:24 190:17 193:4 200:10 206:3 206:10 207:6 210:2,16 212:5,9,24 213:16,17,21 214:10,15,18 214:23 215:14,22 217:3
**school** 109:8 109:17 117:8
**SCID** 99:15,17 100:4
**science** 34:19 72:21 114:12 114:12 177:21,23
**Sciences** 113:11,15
**scientific** 15:14 114:21 114:25 126:25
**scientist** 30:10 236:22
**scope** 26:10 26:21 152:18 153:1,13 154:6,12,13 154:17,21,23 155:1 156:23 158:20 160:9 160:17 161:1 161:17,19 173:20 175:6 176:9 177:4 177:8,16 178:10 179:5 179:24 180:11,14,22 180:24 181:11,14 182:5 183:4 184:7 185:9 185:17 188:25 189:23 190:1 190:5,9,10 190:14,22,25 191:10,20 192:8,11,15 192:24 193:11 194:8 194:15 195:15 196:19 197:5 197:16,18 198:3 200:6 207:19 212:13 213:24 214:13 215:2 216:1,13,23 221:13 246:24 247:11,15 248:22 254:22 255:9 268:4 269:1
**screen** 234:9
**screenshot** 3:14 48:13
**seal** 276:17
**search** 7:24 8:3,10,11 9:2 9:3 15:13 16:4 89:7
**searching** 9:8 15:13
**Seattle** 2:5
**second** 91:4 135:2 155:25 220:14
**secondary** 230:3
**seconds** 234:14
**section** 115:5 260:2,11
**see** 24:12 25:13 41:6 41:17 44:25 50:4 52:4,22 53:14,18 54:3 55:11 58:6 64:1,9 64:13,17,22 65:3,6,22,23 66:8 67:15 67:17 72:22 73:5,9,24 74:15,22 85:7,17 91:23 93:14 98:12 100:5 100:8 101:2 101:8,11,25 104:21 105:16 110:10,12,17 110:22,24 111:2,18 115:7 122:16 127:18 129:11 134:2 134:21,22 136:13 137:1 141:7,19 144:16,24 145:1,19 148:1,7,10 148:14,17,20 148:22 149:13 155:6 155:9 156:7 176:10 188:19 191:3 199:15 227:7 229:16 232:25 233:13,19 236:9 238:11 240:22 241:23 242:25 243:6 243:10 249:20 250:4 250:9,25 251:13,14,17 251:18,22 252:4,19,22 252:25 253:4

253:8 256:9 258:2 259:9 260:22,25 261:3 263:6 263:13 265:15
**seeing** 53:3 54:11 117:5
**seek** 77:21
**Seemal** 224:1
**seen** 117:16 126:19 130:1 130:12 171:23
**segmental** 117:11 223:4
**segmented** 117:14,16,20 117:23,25
**selection** 115:18
**selectively** 215:9 250:2
**self-express...** 57:11
**seminar** 38:14 48:14
**seminars** 48:17
**sending** 101:7 232:19
**sends** 102:13 102:14
**sense** 5:23 10:17 11:1 166:1
**sent** 44:13
**sentence** 129:8 140:5 148:9,9 186:20
**sentences** 96:12 149:7
**separate** 106:14,15,20 108:12 251:5
**September** 44:13,18 46:25 47:14 48:6
**sequence** 119:6 174:6 175:14 177:5 177:5 200:18 200:19,24 226:1,6,7,9 226:15 227:4 228:2,19 229:6,13,21 229:25
**sequences** 201:8
**series** 3:13 38:14 48:14 49:12 224:4 261:22 272:14
**serious** 251:20
**session** 101:16
**set** 42:10 73:11 100:20 102:23 104:10 105:23 261:20
**setting** 82:25 121:16 157:14
**settings** 268:14
**seventh** 221:8
**severe** 99:18 99:19 100:15 222:23
**shakes** 19:11
**shared** 271:17
**show** 48:13 67:23 85:16 89:7 104:9 142:10 153:9 247:22
**showing** 55:12 167:11 232:16,25
**shown** 62:15 103:23 104:6 169:18
**shows** 141:20
**sic** 32:9 36:21 38:12 43:25 77:13 78:5 103:23 107:1 110:8 111:4 115:3 133:8 211:21 228:11 254:16
**side** 45:2,5 50:1 51:24 52:2,12 63:23 144:24
**sigma** 209:24
**signal** 60:23 91:21 92:7 92:18 93:13 93:25 94:14 98:11 161:15
**signaled** 216:20
**signaling** 15:9 58:24 59:4 59:15 60:4 60:17 61:16 61:23 62:4,6 62:8,10,12 63:4,17 65:2 95:1 98:4,19 98:24 156:19 159:2 161:8 161:9,14 163:5 166:4 167:15 177:2 178:5 180:21 207:21 211:16 212:10,11,24 212:25 213:13,21,22 214:10,11,24 214:24 215:24 216:11,25 219:8 226:8 251:21 256:11,25 257:5,13,25 258:11,12
**signals** 140:7
**signature** 24:20
**signed** 16:20 21:8,15 22:10,21 24:22,25 26:6 27:14 28:3 29:13 29:22 35:22 37:5,15,23 88:12,17,25 146:12 164:15 218:1 219:2,9 259:22
**significance** 96:5 100:11 101:13
**significant** 100:18 246:21 250:24
**signing** 16:10 28:12,18 216:18 218:11
**similar** 11:14 54:19 83:21 103:5 222:21 252:8
**similarly** 36:23 268:11
**simple** 94:9,21 119:5 155:22 209:7
**simplistic** 94:18
**simply** 195:12 203:13 236:20
**single** 163:2,7 167:16,25 168:25 226:14
**sit** 21:6,13 23:12 89:12 108:11 117:18 119:14 121:7 159:7 160:22 198:11 263:1
**site** 209:15
**sitting** 6:19 10:10 11:9 98:22 141:10 165:3 168:10 229:18
**situ** 115:17
**situation** 26:12
**six** 13:23 172:10,11 221:7 222:17 222:19 224:14
**skill** 59:3,21

148:25
151:14,24
155:23
217:22
236:19
270:15
271:24
**skin** 3:22
116:22,23
118:1,19,24
119:3,20
121:9,22
122:3,14
123:16,23
124:4,10,14
125:10
143:19 268:9
**skinny** 213:18
**slide** 53:12,16
55:12,20
93:11 94:6
94:12 99:14
99:15
**slides** 90:22
**slow** 79:11
**small** 104:15
208:23
238:25 239:6
239:15 241:7
241:14,17
249:19
**social** 102:20
**Society** 3:17
90:24 113:7
**soluble** 163:21
210:14
**solution**
210:15
**somebody**
46:9,13,15
46:18 83:1,2
119:11,15
**Sonsini** 2:4
**sorry** 8:9
10:21 13:23
16:12 21:10
22:13 23:5
26:22 31:7
40:3 51:24
86:13 88:2
92:19 110:11
117:1 118:4
122:7 126:17
133:9 142:16
152:10
155:15
161:11,12
164:19
167:20
171:17 175:2
179:7 183:22
187:24 199:4
203:2 206:6
206:21
212:14
225:16
228:25
238:20 240:5
241:8 250:23
254:24 263:3
264:19
**sort** 113:6,16
246:11
257:11
**sound** 134:9
134:12 162:9
**sounds** 20:20
162:11
163:25
**sources** 35:11
35:14 36:25
**spans** 258:25
259:1
**sparing**
130:16
**speak** 4:25
101:16,19
102:5 131:21
131:25
132:12
**speaking** 5:1
64:3 71:2
85:19 95:20
101:15 102:6
102:7,8
124:12
222:11 227:9
227:14
**specialization**
109:19
**species** 141:1
**specific** 10:15
10:23 11:20
11:21 12:18
14:7 17:4
30:21 57:3
76:16 81:9
82:13 97:1
106:7 114:12
121:23
122:21 126:1
127:15
138:22
139:14
141:18
142:17
151:11,19
152:4 158:2
162:14
163:24
164:22 170:6
181:5 183:6
183:12
189:15
192:14 194:5
196:7 198:6
199:6 200:8
200:25 201:4
202:24
205:15
209:21 213:3
215:17
216:14
223:25 226:7
230:1 238:4
238:11
257:12,20
269:11,12,22
270:2,7,12
270:13,13,14
**specifically**
10:7 11:15
47:11 65:24
67:24 68:14
95:18 99:3
113:25
120:11
141:12 167:8
206:18
208:16
218:21
230:24
**specification**
252:8
**spectrometry**
186:25
**speculation**
26:10
**speculative**
180:19
**spell** 75:12,13
139:4,5
**spend** 17:8
109:8
**spent** 17:24
18:3,8,13,16
18:19,23
19:10,13,14
19:17,20,24
20:4,10,22
21:7,14
22:11,16
23:7 79:6
80:3 81:3
109:5,11
**splashes**
119:1
**spoke** 102:9
132:3
**spoken** 131:2
131:5,8,11
131:14,17
132:16,20
**spot** 238:7
**stage** 32:20
102:16
**stamp** 65:6
234:14
**standard**
35:19 36:24
187:15,17
188:12
197:21
**standardly**
245:16
**standing**
233:10
**stands** 92:7
93:20
**start** 10:4 33:1
48:1 51:25
56:1 64:15
70:7 85:8
88:15 89:24
135:19
136:11
154:15
155:15 157:4
161:12
164:24
166:25
168:21 179:8
179:10 217:5
240:24
250:18 252:7

263:25 264:2
**started** 13:19 37:6 40:24 47:7 86:20
**starting** 243:9 250:19
**starts** 94:9
**STAT** 92:6,7 92:11,14,22 93:1 198:23
**STAT1** 93:3
**STAT5** 93:7
**state** 4:3,7 157:23 168:24,25 169:6,7,8 170:16 249:21,25 250:5 276:3
**statement** 36:17,22 37:3 41:25 217:17,19 232:14
**statements** 25:1,2,3,5 141:22 194:4
**states** 1:1 104:19 149:3 249:17 251:11 260:4
**statistically** 246:20
**STATs** 93:6
**stays** 217:13
**stem** 121:19 121:20 122:4 122:15,19,23 123:6,21 124:7,19,21 124:23 125:4 125:11 127:3 127:21
**stenographi...** 276:9
**step** 62:16 66:4 155:10 155:13,17,21 155:25 198:12
**steps** 155:4,5 156:5,6,8 226:10 255:4 255:7
**stick** 135:17
**stimulated** 253:21 254:1
**stimulates** 216:10
**stood** 50:20
**stop** 182:1
**stops** 196:4
**strategies** 122:2
**strategy** 122:13
**Street** 1:16
**stress** 139:24 139:25 140:3 140:6,7,12 141:2,12 142:21 143:5 143:8,13 223:20,21,24
**stress-induc...** 223:14
**stripe** 118:1
**strokes** 143:25
**strongly** 188:5 188:6
**structure** 230:3 236:15 236:21,24 271:20,25
**structures** 211:24
**stuck** 55:14 178:15,21
**student** 46:7 107:18 116:18 117:2 117:4
**studied** 79:24 129:9 136:21 243:10
**studies** 53:13 136:8 195:20
**study** 78:1 80:1,4,10,17 107:9 115:20 195:22 199:8 199:8,9,9,12 199:24 232:7 234:23 248:20
**studying** 108:22
**stuff** 7:25 14:20
**STYLE** 275:4
**subject** 25:10 27:14 34:2 37:7 126:11 131:9,18,21 132:1 136:9 142:2 151:14 155:14,18 156:3 159:22 223:3,4,7,13 223:16
**submitted** 8:20 9:6,17 40:12 80:25 89:16
**subordinate** 46:10
**subscribed** 127:13 274:14
**Subsequent** 267:22
**subsequently** 118:20
**substantial** 13:9 83:3,12 86:18 255:23
**subtype** 223:16
**subunit** 97:23 98:2 174:7 192:18 211:4 220:7,8 222:14,17
**subunits** 173:3 174:5 175:16 177:6 179:15 211:5 219:25
**sudden** 182:1
**sufficient** 191:8 216:10 219:13 246:25
**sufficiently** 216:21
**suggest** 158:24 181:2 191:23
**suggestive** 194:12 195:13 197:9 197:14
**suggests** 76:9 191:25 248:25
**suit** 276:14,15
**Suite** 2:5
**summarize** 25:21 46:23 153:16,19 220:2
**summarizes** 169:4
**summary** 156:15
**superoxide** 140:21,24 141:4
**supervised** 117:9
**supervisor** 129:4
**support** 77:21 82:22 83:8 91:7 105:20 216:11,21
**supported** 77:11 99:5
**supporting** 250:16
**supports** 217:16,23
**suppose** 57:4 171:24 186:2 192:4 246:21
**supposed** 175:10 212:8 212:22 214:9
**sure** 5:24 6:8 17:22 20:24 26:11,24 28:10 30:6 31:11 33:3,8 33:22 43:2,4 43:13 50:19 60:20 62:18 62:24 63:10 69:2 78:2 79:19 80:18 82:20 84:11 88:2 94:24 106:13 118:6 118:14 121:5 135:25 139:18

141:20
143:11 146:9
150:21
153:25 155:5
164:9 165:25
180:15
184:11
193:20 197:1
197:15 205:6
208:1 212:2
213:16,25
217:1 218:13
223:23
224:20,24
225:22
226:17,20,24
227:23
237:14
255:11 257:4
257:13
258:14
262:22
263:23 264:3
265:13
**surface** 205:8
210:6
**surprise** 15:22
33:13 89:6
**surprised**
33:15 99:12
134:15
**surprisingly**
79:11
**surrounding**
123:23
**survival** 217:1
217:3
**Susan** 128:18
129:14
**swear** 85:3
**sworn** 4:2
276:6
**symposium**
102:5
**synthetic**
249:19
**system** 98:18
99:21 138:24
183:13 199:4

**T**

**T** 2:3 3:7 162:8
162:13 164:5
169:13,15,19
169:21,22,25
170:1,4,6,7,9
170:12,13
178:6 179:1
180:8 181:21
181:21
216:11,21
217:12,16,24
218:2 219:3
219:11
243:14,15,20
243:25 247:3
247:22 248:9
248:19 276:1
276:1
**T-cell** 45:11
46:4 162:23
181:9 216:25
217:6
**table** 226:13
**take** 4:25 7:1,4
41:5 49:25
53:9 74:8
88:9 89:5
91:4,16
99:14 102:16
106:4,9,15
108:8 133:4
133:11
134:16
146:22
147:23 148:3
148:8,12
149:7 154:20
155:7 187:12
236:23 239:2
241:21 242:4
243:9 247:7
249:5,11
253:16
258:24 267:9
**taken** 67:3
137:22
141:24
219:21
258:21
267:11 274:3
276:8
**takes** 124:21
**talk** 4:19 5:18
38:12,16,19
38:22 39:1,5
48:22 53:5
54:21 55:6
59:8 65:10
65:18 84:16
86:6 94:9
101:23
116:11
121:17
143:12 186:7
224:11,13
257:15
**talked** 91:25
97:18 103:10
144:11
165:18 166:3
176:18 220:3
222:16
268:18
**talking** 5:7
24:1 40:15
57:8 70:7
71:18 86:20
102:21 143:3
146:24
148:18,25
159:18
164:21
165:17
168:17
169:16 170:5
175:25 181:4
186:4 192:17
193:18,22
195:25
204:12 211:7
214:4 217:5
219:24 223:2
**talks** 3:12
38:13 44:19
45:15,19,20
45:24 46:1
47:2,16 48:8
48:17 49:11
52:20 54:2,3
54:9,9,11,18
54:19 132:24
174:17 176:3
**target** 174:14
175:4,24
176:1 188:7
200:20
202:23
208:24 209:3
**targeted** 53:1
115:18
183:18 206:1
209:15
**targeting**
41:14,15
42:4 64:20
173:25
174:18,18,21
174:24
175:18 176:4
176:7,11
201:1
**targets** 208:16
**task** 76:11,13
76:16
**taught** 202:4
271:7
**tcelltracker**
45:9 68:1
**teaching**
141:13
219:11
**team** 45:8
46:11
**technology**
37:7
**tell** 6:1,3 11:23
14:15,16,18
20:10 24:5
25:11 29:25
30:1 31:12
32:11 75:18
81:11 121:19
122:19 136:2
136:11
138:13
151:23
168:22 180:6
180:9 184:5
197:17,24
200:13 203:3
203:19 226:1
236:12
247:13
**telling** 70:20
232:5
**tells** 135:20
173:23
191:15
199:10,12
202:9 227:7
260:6,8,9
**Ten** 133:1
221:19
**tend** 33:15

96:3
**tendency** 5:6
**tends** 96:15,16 138:17
**tens** 165:6
**tenure** 33:6,10 68:8,18 69:12,15,16 69:21 72:15
**term** 95:1 118:7,22 121:25 138:8 138:11,23 139:16 146:4 169:12 187:6 189:13
**terminology** 139:14,15,20
**terms** 21:1 28:25 78:20 94:22 99:19 138:13 139:11 142:4 192:3 268:5 268:10
**terribly** 117:17
**test** 186:24
**testified** 4:4 158:1 276:7
**testify** 6:17 87:13 120:13
**testifying** 36:4
**testimony** 6:14 9:20 16:2 19:2 36:11 48:10 84:2 87:21 90:11 99:1 118:11 127:24 138:4 151:2 159:7 159:11 165:5 177:19 180:25 182:19 183:10 185:17 191:8 194:15 224:18 225:21 226:22 257:23 272:16 274:3 276:12
**testing** 184:4
**tests** 20:14
**TH1** 93:25
**Thank** 4:11 5:10 44:2 73:7,11 104:2,3 105:23 112:23 135:13 136:6 138:1 223:1 236:11 238:22,23 239:21 240:10 241:10 259:18 261:20 264:13 267:8
**Thanks** 72:20 264:19
**that-cell** 168:3
**theory** 141:3
**therapeutic** 252:2
**therapeutica...** 156:1 159:21
**Therapeutics** 53:17,23 54:14 55:9 64:16
**therapies** 123:11
**thing** 65:20 68:12 152:14 152:15 180:9 198:19 201:1 207:23 243:13 257:2
**things** 8:6,8 11:7,24 24:3 64:8 65:21 70:8 71:19 79:10 86:21 98:3 105:7 107:10 119:21 138:19 142:5 154:12,13 197:23 198:18 204:5 209:8,11 218:24 260:17
**think** 6:5,10 7:20,24 9:15 10:15,22 13:8 18:8,12 18:16,19,22 19:9,12,16 21:2 22:7 24:2 27:19 29:23 30:2,4 30:20 31:22 32:5,7,18 46:20 59:6 60:6 61:13 62:17 64:20 84:12 88:7 93:10 94:16 103:18 107:3 108:14 113:3 113:5,9,12 116:16 121:5 121:7,11,14 124:16 127:25 131:23 135:14 137:11 139:10,16 140:17 147:10 157:1 158:23 159:12,18,25 160:1 161:4 161:22 162:2 164:10 168:15 173:18 177:21 178:12,16 181:1 182:10 182:25 184:18 186:17 187:15 191:12 193:2 194:3 197:9 197:19 198:11,17,21 203:23 208:8 209:11,24 213:2 214:14 215:3 216:2 216:4 217:14 218:24 220:3 221:7 222:5 223:15 224:7 224:14,23 225:21 226:6 228:13 229:9 229:12,13 230:23 231:19 235:22 236:23 237:5 237:9 238:10 240:1 242:6 244:10 246:10 247:6 249:2 257:1 257:11 258:3 263:10 265:2
**thinking** 137:7
**third** 163:11 220:20 254:11 264:25
**Thirty-two** 262:2
**thought** 17:2 19:25 50:17 55:13 122:21 123:9 136:4 140:5 163:4 167:9 200:20 202:1 239:18
**thousand** 18:9 18:11
**thousands** 165:7
**three** 4:10 44:23 51:24 52:3 64:19 74:8 102:2 109:11,14 116:1 162:20 164:11 179:15 242:13 259:13 262:3 262:8
**threshold** 245:9,16
**thymidine** 187:4
**tied** 129:5
**time** 1:15 13:3 21:7,14 22:11,16,21 22:25 23:6

23:14 26:23 29:21 46:8 50:13,22,24 55:14,15 65:6 66:15 66:17,20 67:15 68:10 69:24 74:9 81:2 84:13 89:5 107:20 117:10 118:2 132:3 137:1 169:9 200:8 208:4 215:11 221:10 228:6 228:15 234:14 239:3 242:5 248:8 257:19 259:25 262:22 263:3 265:3
**timeline** 47:12 47:25 48:15 51:3 79:24
**times** 12:24 20:12,25 224:5,9
**tissue** 199:25 202:25
**tissues** 64:25
**title** 32:24 49:11 52:24 73:18 134:13 134:19,22 135:16,19,20 135:23 136:2 136:10,14 137:11 233:5
**titled** 52:20
**titles** 33:2,3 134:23 135:18 136:12
**TM-beta** 230:9 230:15,17,20 231:4,13
**today** 6:14 7:8 8:23 9:2,24 10:10 11:9 11:16 12:22 21:6,13 22:24 23:12 25:9 44:7 73:23 89:12 117:19 119:14 120:22 121:3 121:7,8 125:9 126:23 127:19 141:10 144:20 150:1 150:2 159:7 160:22 168:10 198:11 223:19 229:18
**tofacitinib** 135:6 158:10 158:12,15,16 159:8,18,19 159:22 160:1 160:6,13,23
**told** 178:23
**tomorrow** 71:22,24
**top** 10:15 17:16 19:4,8 52:6,13 56:3 61:6,8,15 90:1,12 104:25 112:2 188:15 198:6 243:21
**torture** 242:16
**total** 262:19
**Touch** 105:1,2 105:9
**track** 68:8,18 69:15,21 72:15 109:13 110:4 238:20
**trackable** 204:23
**tracker** 45:11 46:4 205:7 205:22
**TRADEMARK** 1:1
**training** 109:17,19 129:9
**trans-signali...** 167:9
**transcript** 3:20 3:24 63:25 64:6 275:1 276:11
**transcription** 84:11 92:8
**transducer** 92:7
**translational** 3:14 52:24 268:14
**transpresen...** 58:2 61:14 169:5 211:6 211:8,9
**transpresen...** 57:22
**transreceptor** 163:12
**treat** 119:19 137:8 231:22 231:25 235:9 249:2 255:1 271:9
**treated** 117:14 117:19 118:2 119:11,15 120:14 121:10
**treating** 3:22 117:11 267:25 268:1 268:5,7
**treatment** 41:11,15 42:4 50:7 88:20 115:16 115:18 117:6 120:9,12,14 120:17 122:2 122:12,12 125:16,24 127:14 155:19 159:23 233:6 233:14 235:17,18 236:1,2 249:22
**treatments** 53:1 120:21 121:2,8 123:12 125:8
**trial** 1:3 64:11 76:25 77:10 77:16,22 78:15,18,25 79:7,16 80:21,25 81:6 82:22 83:4,22 86:19 89:20 89:24
**trials** 76:20 77:9,14,21 77:23 78:6 83:9 268:16
**tried** 9:10
**trimeric** 57:12
**Trm** 41:15 42:4
**trouble** 122:7
**true** 7:19 25:2 25:3 59:25 134:15 203:12 215:6 274:4 276:11
**truth** 25:11 274:13
**truthful** 6:14 71:5 262:25
**try** 62:5 79:7 88:15 190:16 201:8 211:9 228:15 242:24 247:7
**trying** 11:22 12:1,10 18:6 19:8 27:12 54:17 61:20 86:16,25 126:10 134:21,22 140:8 146:20 149:23 181:2 187:11,13 190:12 194:7 203:17 204:19 218:25 260:12
**tube** 186:24
**turn** 66:11,21 66:23 121:24 235:16,24
**turned** 178:25
**turning** 95:8,8
**turns** 4:25
**tweet** 44:12,16 44:18,22

45:8 67:25 68:15,15 69:19 101:7 102:15
**tweets** 103:1
**Twenty-six** 267:3,4
**TWI** 74:20
**twice** 48:17,21 66:4
**Twitter** 3:11,15 3:20 44:8,9 67:15 68:11 69:24 72:25 101:4
**two** 4:24 45:25 48:1 56:6 57:3 58:5,8 64:19 71:11 79:6 80:3,19 83:5,23 96:11 128:14 128:15 140:5 155:4,6 156:5 167:17 186:20 192:22 207:4 207:8 210:21 211:21 255:4 259:13
**two-year** 79:14
**type** 93:25 96:2,2,13,13 96:15,16 97:9 119:12 119:15 121:6 187:7 199:23 220:20,24 221:3,8,12 239:12
**types** 165:8 270:22
**typewriting** 276:10
**typically** 166:18,21 169:8 170:3

**U**

**U-N-I-W-E-R...** 255:16
**uh-huh** 4:23 5:3,7 8:22 12:3 19:15 29:15 30:24 46:5 59:10 73:6 74:19 86:22 89:21 101:20 102:1 111:15 142:3 156:11 158:5 181:24 184:2 195:9 204:14 206:16 242:1 265:25
**UMass** 68:9
**unable** 10:24
**unactivated** 169:15
**uncommon** 76:20 77:20 81:21
**underactive** 169:11
**undergradu...** 106:3,10,18 106:21
**underlying** 99:4 177:11
**underneath** 52:14,19 72:19
**understand** 5:16,25 6:4,5 6:24 7:5 8:24 25:9 27:3,13 35:13 62:5 75:23,24 80:18 86:16 87:12 88:2 96:8 121:12 145:14,18 146:6 149:19 149:23 150:3 150:6,10 152:7 153:12 153:21 154:4 155:1 173:16 176:22 179:16 190:10,12 194:7 198:10 205:7 206:4 207:6 213:16 214:3,5 223:19 225:20 226:19 248:12 262:21 271:24,25
**understandi...** 23:9 32:19 72:24 126:25 143:13 145:22 151:13,23 152:16 154:23 163:10 167:14,23 173:22 190:8 202:12 211:3 219:7 257:2 269:10
**understood** 24:25 25:12 124:16 168:11 212:23
**underway** 232:8 234:23
**uniform** 120:4
**UNITED** 1:1
**University** 1:7 4:14 23:10 23:13 25:15 25:23 26:3,6 26:16,19 27:4,9,25 28:6,9,21 29:1,4,10,18 29:20 30:10 32:17 33:6 33:10,20 35:24 36:6 46:19,21 68:18 69:12 69:22 72:16 107:16,18 275:4
**Uniwersytet** 255:15
**unrelated** 43:9 43:13
**unwilling** 10:24
**upper** 61:7
**upstream** 94:19,21,22 95:1,3,11,16 95:19
**use** 55:25 56:5 91:14 95:1 107:8 118:22 119:19 120:3 125:10,23 127:13 160:19 170:2 172:5 187:15 212:6 221:20 221:25 224:21 233:8 237:12 238:2 247:13 251:12 254:15 256:20 272:6
**useful** 165:21
**uses** 141:15 253:9
**usually** 34:14 34:18 66:11 66:21 92:24 95:3 166:17 171:19 186:18,25 187:8 196:6 201:24 204:4 236:23
**UVA** 123:16,17
**UVB** 123:16,17

**V**

**v** 1:6 275:4
**V-A-S-S-I-L-...** 260:21
**valid** 140:14
**validate** 228:8
**value** 186:13 186:19 187:18
**variable** 157:3 159:6
**variety** 197:20 224:18 251:9
**various** 141:8 156:25 159:5 159:6
**vary** 138:18 231:23 246:11
**Vassilev** 260:20
**venture** 64:12

**Vermont** 107:16,19,24 108:3
**version** 114:11 164:21,24
**versus** 94:19 96:2 107:3,5 169:7
**vial** 187:2
**video** 52:20 66:7,12,15 66:21,23 234:20,21 235:20
**view** 26:15 46:11 94:2
**Villaris** 37:14 37:16,21 38:1 53:17 53:22 54:14 55:8 64:16 75:22 76:1 87:23 88:13 88:20,24
**virtual** 3:12 49:12
**viruses** 96:16 107:10,13
**visualizing** 206:21
**vitiligo** 3:15 41:13,16 42:5 50:7 52:25 88:21 101:23 116:11,13,17 117:5,11,14 117:17,20,24 117:25,25 118:3,4,8,13 118:17,20,23 119:8,12,15 119:19 120:1 120:22,25 121:6,13,22 122:2,13 123:11 124:17,20,22 125:10,16,24 126:14,16,19 126:24 127:14,17 134:1,3,5 138:7,21 139:1,3,11 139:23 140:1 140:3,6,8,13 140:15 141:3 141:5,13 142:22 143:4 143:22 155:15 157:8 157:25 160:3 217:25 223:4 223:8,10,14 223:16,16,20 231:7,22,25 232:9 233:6 233:14 234:25 235:10,17 236:1 248:3 248:9,14 249:3 254:18 255:1,5 268:9 270:22 270:25 271:9 271:15,18
**vitro** 186:4 189:21 190:20 195:23 196:5 196:14,24 197:13 199:8 242:22 243:7 248:17 252:11 253:3 253:4 256:2 258:11
**vivo** 249:7 252:12,20,22 253:5 256:5 258:12
**Volume** 42:22 49:15

**W**

**W-A-R-S-Z-A...** 255:16
**wait** 5:8 132:18
**waiting** 101:18 102:16
**want** 5:18 14:21 16:17 33:7 43:2,4 43:13 60:8 60:14 62:17 69:2,23 70:22 71:11 76:12 79:19 80:9,18 81:11,19 82:5,19 86:4 86:4 89:5 94:15 116:11 135:25 138:6 143:11 156:9 164:8 165:20 205:2,3 213:15 214:17 218:13 220:1 224:20,23 225:22 226:20,24 237:11 239:22 241:10 242:8 249:6 252:9 256:11 262:13,17,19 263:5,7,22 264:2
**wanted** 164:12 171:25 172:2 199:6
**Warszawski** 255:15
**Washington** 2:5,10
**wasn't** 14:9,17 15:25 70:18 102:4 107:20 129:5 263:23
**watch** 66:7 204:25 205:2 205:3 206:14
**watched** 66:14
**way** 5:11 13:9 14:17 28:2 64:7 88:16 92:18,18 95:9 96:3 98:23 138:4 166:19 168:5 181:6 187:21 196:7 199:20 205:2 208:2 210:19 211:10 212:22 213:19 214:9 216:18 221:23 222:8 223:18 229:16 265:1
**ways** 107:8 141:9 196:9 220:4 252:8
**we'll** 42:14 226:10
**We're** 18:1 39:8 85:23 272:19
**webinar** 48:18 48:21
**webpage** 232:16,25 233:8,11
**website** 233:1
**week** 54:1
**weekly** 54:20
**welcome** 137:25 252:16
**well-known** 94:15 149:4 272:7
**well-respect...** 113:21 114:4 114:9,15
**went** 12:10 199:13 244:17,22 245:2 272:14
**weren't** 63:10
**whatnot** 80:11
**willful** 25:5
**William** 1:12 3:3 4:1,9 49:7 274:2,8 275:7
**Wilson** 2:4
**wish** 70:4,5 257:21
**withdraw** 154:14 202:16 258:19
**witness** 3:2 6:8 9:21 15:19 16:25 19:3,11,23 21:10,17

22:1,7 23:16 26:2,11,22 27:8,19 28:15 29:7 31:7 32:23 34:4,9,24 35:7,18 37:10 40:7 42:7,24 43:9 43:22 44:15 45:17 47:4 48:11 49:18 49:23 50:16 51:2,14 53:25 54:16 55:11 56:9 56:14 57:1 58:20 59:6 59:17 61:1 63:20 65:13 66:2,11,19 68:22 69:15 70:14,20,23 71:3,15 72:1 72:4,8 74:1 77:2 79:10 79:19 80:8 80:24 81:19 83:8,15,24 84:3,13,23 86:13 87:4 87:16 88:5 89:10,18 90:12 91:1 92:21 96:7 98:7 99:2,11 103:3,18,25 105:12 107:12 118:12 120:24 125:1 126:8 127:6 127:25 128:9 130:19 133:17 140:17 141:17 142:16,24 143:7,24 145:10 146:1 146:9 147:10 149:19 150:9 150:18 151:3 151:18 152:3 152:10,21 153:4,16,25 154:9 156:15 158:21 159:12,25 160:10,18 161:2,20 164:8,19 165:6,25 166:16 167:6 167:20 168:5 168:14 174:10 175:8 175:18 176:10 177:10,20 178:12 180:1 180:15 181:1 181:16 182:7 182:20 183:5 183:11,18 184:9,16,22 185:11,19,25 188:1 189:4 190:3 191:2 191:11,22 192:3,13 193:2,13 194:3,16,25 195:17 196:21 197:7 198:5,17 199:20 200:7 201:3,11 202:12 203:8 204:4 205:6 205:15 206:6 207:20 208:12 209:7 209:20 210:24 211:23 212:14 213:2 213:11,25 214:14 215:3 216:2,14,24 218:7,20 219:16 227:16,18 228:5,21,25 229:9 232:13 233:3,22 234:2,7,12 234:18 235:7 236:8 237:11 239:22 244:2 244:7 245:15 246:4,10,20 247:6,19 248:2,7,25 254:24 255:11 258:2 258:14 264:25 267:20 268:5 269:2,8,14 269:25 270:5 270:10,19 271:4,12 272:3 276:17

**witness's** 84:12

**word** 27:1 41:12 89:6 134:12,24 168:22 176:11 217:15

**wording** 122:8

**words** 55:25 91:18 143:12 153:19 156:9 189:19 226:25 235:3 236:5 238:2

**work** 12:4 45:21,22 47:4,17 51:3 76:19 80:6 88:5 108:17 115:14 119:1 130:21 145:7 149:21 231:21 232:10 235:1

**worked** 47:19 83:23 84:25 128:9,14,15

**working** 22:11 30:13 40:24 79:6 80:20 83:4 107:16 107:19 108:24 118:21 125:5 127:6,12,16 130:5 224:15

**works** 46:13 46:15,18 175:9

**world-renow...** 129:10,13 130:15,17

**worms** 96:17

**wouldn't** 33:15 45:17 66:16 74:25 77:18 84:3 99:11 110:6 119:4 120:24 127:15 157:21 197:20 235:9 248:7,13

**write** 5:1 20:18 238:19

**writes** 72:20

**writing** 150:11

**written** 8:19 88:16

**wrong** 222:4

**wrote** 27:23 29:12 64:7 67:21 80:24 94:5

**X**

**X** 3:1,7 44:4 69:24 100:7 100:12

**Xing** 230:18,21 230:23 231:4

**Y**

**Yale** 107:22,24 108:4 128:5

**yeah** 6:2 8:13 16:13 17:12 17:14 19:7 24:2,4,24 28:16 36:2,3 40:7 44:15 48:19 49:23 57:9 58:4,15 59:6,6 61:9 62:24 64:10 66:2,19 75:8 76:9,10 78:20 87:9 87:10 90:2 95:4 99:2

102:10,10
105:7 106:19
106:19 109:2
110:6 112:16
113:12 116:3
117:4 119:9
122:10 123:9
123:25
124:12
130:10
134:10 135:3
135:3 139:5
149:3 151:3
162:11
163:17
166:16 169:4
174:13
176:23
180:15
185:12 187:3
187:23 190:3
193:13 196:6
196:7 199:21
201:11 202:2
202:13
203:16
204:10,10
205:23
206:24
211:12
214:21 216:2
217:14
222:11
237:19
241:20
244:11,21
245:7 246:10
256:25 259:5
**year** 30:21
41:2 47:1,14
48:6 109:5,8
109:22 111:6
268:22
**years** 66:3
79:6 80:3,19
83:5,23 86:5
89:15 109:11
109:15 111:1
129:8
**Yep** 215:16
**yesterday**
13:10,14,24
14:4
**York** 2:9

**Z**

**Zoom** 2:3
48:18,21

**0**

**06437** 4:10

**1**

**1** 25:13 63:5
93:25 96:2
96:13,15
154:20,22,24
155:1,4,22
156:1,6,7,23
157:9 158:17
159:23
160:15
161:17
165:12
170:25 171:4
171:13
172:15,19
173:6,9,12
173:20,21,23
174:2,3
175:2 176:6
176:11 177:4
177:15,17
179:5 180:11
180:22
181:12 189:1
190:14,22
192:8,24
197:16,18
220:11,18
221:13
223:12 230:9
230:15,17,20
231:4,13
246:17
247:16
249:12,14
250:18,18,23
252:18
253:16,19
**1:30** 137:22
**10** 17:11 54:3
99:14 110:14
111:5 241:9
242:4,6
243:5 245:20
246:1
**10:43** 67:3
**10:50** 67:4
**100** 3:20 18:24
20:25 244:18
244:23 245:3
**1001** 144:6,6,8
152:7,11
**1006** 77:13
78:5 110:8
111:4 115:3
133:6,8,19
**1037** 3:9 39:8
39:9,12,16
39:19,20
41:6 42:19
42:20 43:25
**1038** 3:11
42:12,15
44:12 45:13
**1039** 3:12
48:24 49:2,7
50:1 51:10
**104** 3:20
**1040** 3:14 51:7
51:17,19,23
52:2 53:3,10
54:12 58:12
63:24 65:22
**1041** 3:15 67:5
67:9,11,14
**1042** 3:16 67:5
73:13,15,18
74:11
**1043** 3:17
90:14,17,20
93:11 94:6
99:15
**1044** 3:20
100:21,24
101:3
**1045** 3:20
104:11,14,19
**109** 149:8
**11** 135:4,5
221:24 251:8
**11,278,505** 1:9
**118** 49:25
**12** 136:5,18
221:25 243:9
244:12,15
252:18
**12:45** 137:22
**13** 222:5,6
244:12,15
**14** 233:24
244:13,13
263:19
**140** 42:22
**1448** 41:5
**14th** 232:6
235:4 236:5
**15** 134:8 205:2
206:3,20
208:19 215:8
215:13,15,18
215:18,21,22
234:14
251:18
256:13,18
263:19
**150** 18:20
19:14
**16** 40:8 134:24
135:5,10
**161** 155:7,9
**16th** 40:5,25
101:6,21
**17** 243:9
**18** 250:19

**2**

**2** 53:9 54:12
58:12 63:23
96:2,13,16
110:13 111:4
112:2 158:9
158:14 162:9
173:15,19,20
173:23
174:13 176:3
250:17,19
251:8 253:16
256:10,13
260:7
**20** 1:14 17:13
22:17 274:4
**200** 18:17
**200,000** 78:12
78:14,17
79:17 80:5
80:22
**20001-4413**
2:10
**2005** 24:10
106:1
**2006** 77:6
133:5,7,16
133:16,19

**2007** 107:15 108:6 254:16
**2008** 108:6
**2011** 107:15 108:18 267:17,23
**2013** 108:25 238:16 239:19 241:21,25 242:19 243:4 243:20 247:1 248:16 249:6 249:7,12,17 250:21 251:11,19 252:13 255:20 256:10 263:19 269:16 270:3 270:14
**2014** 238:18 239:19 241:25 242:19 252:6 252:8,9
**2015** 238:21 239:20 241:25 242:19 253:1 253:9,17 255:20
**2017** 11:18 12:7 59:2,21 109:23 111:6 111:10,21 112:5,10,21 117:21 119:16 120:15 128:22 136:23 145:3 145:20,23 146:6,7,23 147:1,6,15 148:1,7,10 148:15,18 149:2,6,12 149:17,20 150:16 151:4 151:7,15 152:1 157:22 187:14 217:22 231:12 236:18 248:15 267:23 268:19,22
**2018** 128:23 128:25 268:22
**2019** 40:22 41:4 146:24 147:1,2 150:19,25 265:10,11
**2020** 30:23,25 40:5,9,11 41:1,2 42:22 44:13,18 46:23 47:12 47:24 48:4 48:12,14 74:24 265:12
**2021** 52:21 53:6,21 55:7 65:11,17 67:21 68:16 69:9,19 72:14 73:22 75:5,9 76:8 76:24 79:2 136:18 232:3 232:6 233:24 235:4 236:5 265:14,15
**2022** 3:18 49:21 50:23 90:23 259:8 259:12,18 260:1,12 261:5
**2023** 1:14 3:21 24:23 37:16 78:21 79:1 89:25 101:6 101:21 102:3 104:20 105:18 129:1 274:4,12 276:18
**2024** 78:22 238:23 239:20 240:24 241:1 241:4,6,16
**2025** 239:9,10 239:16,18 240:2,3,5,9 240:14,16,19 241:16 255:13,19 256:1,4
**2027** 276:24
**2028** 264:3,8
**2029** 264:12
**2030** 264:14
**2032** 264:16
**2049** 264:18
**2050** 264:20
**2051** 265:16
**2055** 147:3
**2087** 265:18
**21,000** 20:12
**2102** 264:22
**2103** 265:8
**2104** 265:20
**2105** 265:22
**2106** 265:6
**2107** 265:24
**2108** 266:1
**2109** 265:11
**2110** 266:3,4
**2111** 266:5
**2112** 266:7
**2113** 266:9
**2114** 266:11
**22** 44:13,18 52:21 53:21 55:7 65:11 65:17 225:17
**22,500** 20:17
**22nd** 53:6 67:21 68:16 69:9,18 72:14 104:20
**23** 225:17
**23,500** 20:12 20:13
**238** 1:18
**24** 3:18 90:23 145:3,20 262:6
**24th** 145:22 146:7 147:15 149:12 231:12 248:15 254:16
**267** 3:5
**27** 73:22 262:9
**272** 3:6
**27th** 276:18
**28** 262:11
**29** 244:20 262:11

**3**

**3** 63:5 74:14 77:7,8 78:4 81:6 88:10 158:4,12 159:2 251:3 251:6 260:14
**3:30** 219:21
**3:38** 219:21
**30** 17:15 18:12 18:24 19:10 19:13 20:10 20:12 254:2 262:11 276:24
**300** 253:21
**30th** 110:2
**31** 250:19,23 262:11
**32** 262:11,18 266:13
**33** 225:17 261:25 263:5
**34** 46:4 146:22 245:3 259:1 259:7
**37** 260:19
**375** 237:15,16 237:19
**38** 44:1
**388** 4:9
**39** 3:9
**3rd** 24:23 37:16

**4**

**4** 3:4 115:6 149:8 241:9 249:5,11,14
**4:55** 258:21
**40** 17:18 136:5 136:17 241:6 244:25
**42** 3:11
**44** 153:9,13
**450** 237:3

**46** 260:1
**47** 260:1
**48** 3:12 241:12
**489** 145:11
**49** 241:17

**5**

**5** 115:15 225:5 246:7
**5.3.1** 260:2,11
**5:06** 258:21
**5:47** 267:11
**5:54** 267:11
**50** 17:21 22:18 161:21 241:6 253:22
**505** 34:1 36:1 37:8,17 39:25 43:7 43:16 50:25 52:9 68:5,17 69:11,20 101:22 144:11,17 145:17,24 146:14 147:7 147:17,22 149:5,11,17 149:25 150:15,24 151:10,15,25 152:8,18 153:1 154:6 154:18,21 155:11 160:15 224:11,16 225:9,25 226:5,16 227:1,24 228:16 229:4 229:19 230:11,14 240:20 241:2 241:19 245:8 245:24 246:14,24 254:19 259:4 259:6,15 262:16,20 266:24 267:5 271:7 272:1
**51** 3:14 121:25 122:5,9
**5100** 2:5
**52** 88:9
**53** 147:23,25
**5742** 65:6,7
**58** 148:3

**6**

**6** 129:7 242:25 243:5
**6:00** 273:2
**60** 17:24 244:23
**61** 241:6
**62** 145:11
**62/489191** 144:25
**62489191** 41:10
**63** 259:12
**64** 259:12
**65** 148:8
**66** 245:5
**67** 3:15,16

**7**

**7** 76:8 110:23 110:25 243:5 259:12
**70** 18:3 148:12 261:23,24 263:5
**701** 2:4
**71** 244:18 258:25
**714** 251:16,18 256:21 257:1
**72** 148:17
**75,000** 20:25 21:2,7,14,23
**750** 20:8,9,12 20:25
**7th** 74:24 75:5 75:9 79:1

**8**

**8** 91:17 93:11 94:6,12 233:19 249:12,14
**80** 148:20

**9**

**9** 1:16 49:15 244:17
**9:13** 1:15
**90** 3:17
**901** 2:9
**94** 148:22
**98104-7036** 2:5