

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD
HIGHLY CONFIDENTIAL | PROTECTIVE ORDER

-----x

MERCK SHARP & DOHME LLC,

Petitioner,

-against-

THE JOHNS HOPKINS UNIVERSITY,

Patent Owner.

-----x

CASE IPR2024-00240
U.S. Patent No. 11,591,393 B2

STENOGRAPHIC DEPOSITION OF:
PAUL E. OBERSTEIN, M.D.
Wednesday, February 19, 2025
7:59 a.m. - 3:21 p.m. | Pages 1 - 320

Reported stenographically by:
Richard Germosen, FAPR, CA CSR No. 14391
RDR, CRR, CCR, CRCR, CSR-CA, NYACR, NYRCR
NCRA/NJ/NY/CA Certified Realtime Reporter
NCRA Realtime Systems Administrator
Job No. J12413091
BILLING FR Ref. 52261-0005IP1

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

STENOGRAPHIC DEPOSITION on behalf of Patent Owner
of PAUL E. OBERSTEIN, M.D., taken in the above-entitled
matter before RICHARD GERMOSEN, Fellow of the Academy of
Professional Reporters, Certified Court Reporter,
(License No. 30XI00184700), Certified Realtime Court
Reporter-NJ, (License No. 30XR00016800), California
Certified Shorthand Reporter, (License No. 14391),
NCRA/NY/CA Certified Realtime Reporter, NCRA Registered
Diplomate Reporter, New York Association Certified
Reporter, NCRA Realtime Systems Administrator, taken at
the offices of PAUL HASTINGS LLP, MetLife Building, 200
Park Avenue, New York, New York 10166, on Wednesday,
February 19, 2025, commencing at 7:59 a.m.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

A P P E A R A N C E S:

PAUL HASTINGS LLP

BY: PRESTON K. RATLIFF II, ESQ.

-and-

BY: JESSICA M. STAURING, ESQ.

-and-

BY: JINNY JI YOON LIM, ESQ.

MetLife Building

200 Park Avenue

New York, New York 10166

(212) 318.6000 | (212) 230.7742 (FAX)

prestonratliff@paulhastings.com

jessicastauring@paulhastings.com

jinnylim@paulhastings.com

Attorneys for the Petitioner and witness

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

A P P E A R A N C E S: (CONT'D.)

FISH & RICHARDSON

BY: CHRISTINA BROWN-MARSHALL, Ph.D., ESQ.

1180 Peachtree Street, N.E.

21st Floor

Atlanta, Georgia 30309

(404) 892.5005

brown-marshall@fr.com

Attorneys for the Patent Owner

FISH & RICHARDSON

BY: CASEY M. KRANING, Ph.D., ESQ.,

(via phone and Bridge Mobile streaming)

222 Delaware Avenue

17th Floor

Wilmington, Delaware 19801

(302) 652.5070

cmk@fr.com

Attorneys for the Patent Owner

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

A P P E A R A N C E S: (CONT'D.)

ALSO PRESENT:

KAREN MOREIRA, ESQ., Merck

MARK STEWART, ESQ. Merck,

(via phone and BridgeMobile streaming)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

I N D E X

WITNESS	EXAMINATION
PAUL E. OBERSTEIN, M.D.	
BY ATTORNEY BROWN-MARSHALL	8

E X H I B I T S

EXHIBIT NO.	DESCRIPTION	PAGE
Exhibit 1150	document entitled Rebuttal Declaration of Paul E. Oberstein, M.D.	29
Exhibit 1003	document entitled Declaration of Alfred I. Neugut, M.D., Ph.D., M.P.H.	38
Exhibit 2405	document entitled Gastrointestinal Cancer - Gastroesophageal, Pancreatic, and Hepatobilia 4042	165
Exhibit 2406	document headed HHS Public Access	170
Exhibit 1005	document MERCK EX1005	263

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

E X H I B I T S (CONT'D.)

EXHIBIT NO.	DESCRIPTION	PAGE
Exhibit 2061	Merck document JHU2061	291
Exhibit 2131	document JHU2131	301
Exhibit 2408	document entitled Amendment #1	303
Exhibit 2409	document entitled Amendment #2	305
Exhibit 2410	document entitled Amendment #3	306

**original exhibits returned with original transcript
by THE SULLIVAN GROUP OF COURT REPORTERS to
FISH & RICHARDSON PC
(exhibit index concluded)

***Exhibits 2408, 2409, and 2410 as deemed
confidential under the Protective Order.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 -----

4 P R O C E E D I N G S

5 7:59 a.m.

6 -----

7 CERTIFIED STENOGRAPHER: On the
8 stenographic record 7:59 a.m.

9 Good morning. My name is Rich
10 Germosen. I am a Certified Stenographic
11 Reporter. My license is available for
12 inspection.

13 - - -

14 (Whereupon, the Certified
15 Stenographic Reporter administered the oath to
16 the witness.)

17 - - -

18 P A U L E. O B E R S T E I N, M.D.,
19 (the witness produced a New York State driver's
20 license), having been first duly sworn or affirmed,
21 was examined and testified as follows:

22 EXAMINATION BY ATTORNEY BROWN-MARSHALL:

23 BY ATTORNEY BROWN-MARSHALL:

24 Q. Good morning, Dr. Oberstein.

25 A. Good morning.

 Q. Would you please state your full

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 name and address for the record.

4 A. Paul Eliezer Oberstein, 644 West
5 232nd Street, Bronx, New York.

6 Q. And, Dr. Oberstein, have you been
7 deposed before?

8 A. I have been deposed before, yes.

9 Q. Okay. How many times?

10 A. As far as I recall, just one time.

11 Q. Okay. And what sort of matter was
12 that deposition related to?

13 A. As I recall, it related to a
14 medical malpractice case.

15 Q. And were you serving as an expert
16 in that case?

17 A. I was not serving as an expert.

18 Q. Were you a fact witness in that
19 case?

20 A. I was a party in that case.

21 Q. Okay. And you understand that you
22 are here testifying today under oath; correct?

23 A. That's correct.

24 Q. Okay. And that you understand that
25 according to that oath, you are required to
26 tell the truth, the whole truth, and nothing

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 but the truth; correct?

4 A. Yes.

5 Q. And will you do that?

6 A. Yes.

7 Q. The court reporter here is taking
8 down everything that I say and that you say,
9 so we need to make sure that we speak loudly
10 and clearly and not speak over each other.

11 Is that understandable?

12 A. Yes.

13 Q. And now, I'm planning to take a
14 break probably about every hour or so, but if
15 you need to take a break before that, just let
16 me know, but the one thing that I ask is that
17 if there is a question pending, please answer
18 the question, and then we can take a break
19 after that, okay?

20 A. Sounds good.

21 Q. Is there any reason why you can't
22 give your best testimony today?

23 A. No.

24 Q. Okay. No medications that might
25 interfere with your ability to give your best
26 testimony?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. No.

4 Q. No car accidents on the way to the
5 deposition?

6 A. No.

7 Q. Okay. Have you previously served
8 as an expert in a legal matter before?

9 A. Yes, I have.

10 Q. Okay. Was that a patent-related
11 matter?

12 A. So I have served in a
13 patent-related matter, yes.

14 Q. Okay. And just generally, what
15 sort of technology was that related to?

16 A. The patent matter was related to a
17 medication, a pharmaceutical drug.

18 Q. Okay. What type of drug?

19 A. Can you clarify the question?

20 Q. Well, you said it was related to a
21 pharmaceutical or a drug. Just generally what
22 type of drug?

23 A. It was a chemotherapy agent.

24 Q. Okay. But you weren't deposed in
25 that matter in which you served as an expert?

26 A. Correct. I -- I did some

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 preliminary work with the company -- with a
4 law firm, but did not lead to a deposition
5 yet.

6 Q. Okay. So it's an ongoing matter?

7 A. It is an open matter, yes.

8 Q. Okay. And do you anticipate that
9 you will be filing an expert report in that
10 matter?

11 A. So I don't know yet. I've not
12 begun such a report or received an assignment
13 to do that.

14 Q. Okay. And as a part of your work
15 as an expert in that matter, have you been
16 asked to review any patents?

17 A. Yes, I reviewed patents in that
18 matter.

19 Q. Okay. Are you the inventor on any
20 patents?

21 A. Not that I'm aware of.

22 Q. Okay. Have you previously worked
23 on any projects that resulted in patents being
24 issued?

25 A. So I partly answered the previous
 question vaguely, because I presume so, but

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

2 I've not been a named patent holder, and I'm
3 not certain whether or not any of the projects
4 I've worked on have led to patents.

5 Q. Okay. But you're not aware of
6 being an inventor on any patents?

7	A. Correct.
---	-------------

8 Q. Are you familiar with the structure
9 of a patent?

10 ATTORNEY RATLIFF: I object to the form
11 of the question.

12 A. Yes, I believe so.

13 Q. Okay. So you're familiar with the
14 patents having a specification section?

15	A. Yes.
----	---------

16 Q. Okay. And you're familiar that
17 patents have claims as part of the patent?

18 | A. Yes.

19 Q. Are you familiar with the patent
20 examination process?

21	A. Yes.
----	---------

22 Q. Okay. And what is your
23 understanding of a patent examination process?

24 A. Can you be more specific about
25 that?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Well, you said you're familiar with
4 the process. I just want to know sort of at a
5 high level what your understanding is of what
6 that process is.

7 A. So my understanding is that a group
8 of proposed inventors will submit a patent to
9 the Patent Office and the Patent Office will
10 then evaluate that patent and make a
11 determination about patentability. I also
12 understand from reviewing this case that
13 others can then challenge the patent, and
14 there are times where it will come back and be
15 revisited.

16 Q. And what sort of challenges do you
17 understand that can be made to a patent that's
18 already issued?

19 A. So I understand from this case that
20 some challenges to a patent may be issued if
21 the patent is anticipated in the prior art or
22 is obvious from the prior art. I'm sure there
23 are many other reasons why such things can be
24 challenged.

25 - - -

(Clarification requested by the

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 stenographer.)

4 - - -

5 A. Why a patent can be challenged, but
6 those are the ones I'm familiar with from this
7 case.

8 Q. And you mentioned anticipation.
9 What is anticipation?

10 A. So as I understand, anticipation is
11 where the claims of the patent are previously
12 reported in a prior work of art that would be
13 publicly available.

14 Q. And you also mentioned obviousness.
15 What is your understanding of obviousness?

16 A. So my understanding of obviousness
17 is that a person of ordinary skill of the art
18 with the prior art references might be able to
19 deduce all of the claims within the patent.

20 Q. And, Dr. Oberstein, you understand
21 that you are testifying today as an expert in
22 an inter partes review proceeding or IPR
23 proceeding; correct?

24 A. Yes, I understand that.

25 Q. Okay. And you understand that IPR
 proceedings, including deposition transcripts,

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

are public; correct?

3 ATTORNEY RATLIFF: I object to the form
4 of the question, as well as to the premise of
5 the question.

6 A. So I am not aware of that and I
7 don't know if that's true.

8 Q. Okay. And did counsel inform you
9 that the transcript from this deposition will
10 be publicly available on the USPTO website?

11 ATTORNEY RATLIFF: I object to the form
12 of the question.

13 A. That is not something I ever
14 discussed with my counsel.

15 Q. And before we get started,
16 Dr. Oberstein, I notice that you have several
17 piles of documents in front of you. What are
18 those documents?

19 A. So I have several. I have my
20 rebuttal declaration that I submitted in this
21 patent case. I have a copy of the '393
22 patent, the MSI study record, several
23 declarations, including from Dr. Lonberg,
24 Dr. Goldberg, Dr. Le, and Dr. Pardoll, as well
25 as Dr. Neugut, and then several -- actually,

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

six source articles that I reference in my
declaration.

4 Q. Okay. And which articles are
5 those?

6 A. So these are articles by Steinert;
7 Champiat; Chapelle; Benson, sorry, there are
8 seven. Hamid, Pernot, and Salipante.

9 Q. And are those clean copies or do
10 those copies have any sorts of annotations on
11 them?

12 A. These copies do not have any
13 annotations.

14 Q. So they're all clean copies?

15 A. Of the articles?

16 Q. Of all of those documents?

17 A. So everything is clean. I have
18 several stickies, Post-its in my rebuttal
19 declaration.

20 Q. And where are those stickies
21 located?

22 A. So I have three. Two of them are
23 next to exhibits in the appendix. One is
24 Exhibit 1135 and one is Exhibit 1137.

25 Q. Why do you have stickies next to

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 Exhibit 1135 and 1137?

3 A. So I place notes next to those
4 because in my review of my declaration, I
5 noted that I had not actually reviewed the
6 depositions prior to signing my declaration.
7 I had reviewed the declarations of those
8 names, people, but I confused it and wrote
9 "deposition" by mistake.

10 Q. Okay.

11 A. So I'd like to remove those
12 essentially.

13 Q. Okay. And which depositions are
14 those?

15 A. That was one, 1135 was the
16 deposition of Jennifer Newberger.

17 Q. Okay.

18 A. And Exhibit 1137 was a deposition
19 of Brian Segers.

20 Q. So you did not review the
21 deposition transcripts of Ms. Newberger or
22 Dr. Segers?

23 A. Correct, but I reviewed their
24 declarations, which was my mistake.

25 Q. And I see that you have at least

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 one other sticky note in there.

3 A. Yes.

4 Q. What is that one?

5 A. I have one other sticky note, which
6 is in Paragraph 188 of my declaration, where I
7 wrote that my opinion is consistent with
8 Dr. Neugut's declaration and deposition
9 testimony. I had not -- as I recalled, had
10 not reviewed Dr. Neugut's deposition prior to
11 signing this declaration -- my declaration. I
12 have subsequently reviewed it and it was
13 available to me, but I had not reviewed it yet
14 by the time I signed the declaration.

15 Q. Okay.

16 A. My review of that deposition has
17 not changed any of my opinions in this case.

18 Q. Okay. So you'd like to make a
19 correction to Paragraph 188 to remove the
20 mention of Dr. Neugut's deposition; correct?

21 A. Correct.

22 Q. Okay. Are there any other changes
23 that you would like to make to your
24 declaration?

25 A. There are none that I would like to

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 make or none that I'm aware of that need to be
3 made.

4 Q. And, Dr. Oberstein, when were you
5 first engaged to work on this case?

6 A. Can you define "engaged" perhaps?

7 Q. Well, let's start: When were you
8 first contacted with respect to this case?

9 A. So as I recall, I was first
10 contacted in the summer of 2024, this past
11 summer, about potentially consulting in
12 regards to this case.

13 Q. And who contacted you in the summer
14 of 2024?

15 A. So I apologize, I'm very poor with
16 name recollection, but an attorney from the
17 Paul Hastings law firm or perhaps it wasn't an
18 attorney. A representative from the Paul
19 Hastings law firm.

20 Q. And that representative, is that
21 one of the attorneys present here today?

22 A. I do not believe that the initial
23 contact was from one of the people present
24 today.

25 Q. Is it a male or a female attorney?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. I don't recall. It was an email.

4 Q. An email.

5 And when did you first speak with
6 someone from the Paul Hastings law firm about
7 this case?

8 A. So shortly after that initial
9 contact, when I expressed an interest in
10 speaking, I had a telephone conference with
11 members of the Paul Hastings law firm.

12 Q. And which members were those?

13 A. I don't recall the names.

14 Q. Are they one of the attorneys that
15 are present here today?

16 A. I believe several of the attorneys
17 here today may have been part of that, but I
18 don't recall exactly.

19 Q. And have you signed a formal
20 engagement letter with respect to your work in
21 this case?

22 A. Had I or have I?

23 Q. Have you?

24 A. I have, yes.

25 Q. Okay. And approximately when did
you sign that engagement letter?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So approximately the summer of
4 2024. I don't recall if it was -- which month
5 in the summer. Perhaps June or July.

6 Q. And did you have any other
7 conversations with anyone from the Paul
8 Hastings law firm prior to the signing that
9 engagement letter in June or July of 2024?

10 A. I do not recall having any other
11 conversations.

12 Q. Okay. So it was just that one
13 conversation with the members of the Paul
14 Hastings law firm prior to signing the
15 engagement letter?

16 A. Correct.

17 Q. Okay. And what did you discuss in
18 that conversation prior to signing your
19 engagement letter?

20 A. So as I recall now, though this is
21 my recollection, they gave me a very general
22 sense that they were looking for an expert to
23 evaluate in the case, to understand whether I
24 had the time and felt I had the expertise to
25 do that.

26 I recall that they discussed with

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 me that there is a patent about a purported
4 method of treatment and that there were prior
5 art documents that discuss some of the factors
6 in the patent, and they wanted to know if I
7 could evaluate those and give an assessment as
8 to whether the claims of the patent were
9 previously revealed in the prior art
10 references or -- or previously taught by the
11 MSI study record.

12 Q. Was Dr. Neugut involved in that
13 conversation?

14 A. No.

15 Q. Are you acquainted with Dr. Neugut?

16 A. What do you mean by "acquainted"?

17 Q. Do you know each other?

18 A. I do know Dr. Neugut. I haven't
19 seen him in quite some time, but I do know of
20 him and do know him.

21 Q. Okay. Have you spoken to
22 Dr. Neugut about any of the matters involved
23 in this case?

24 A. I have not.

25 Q. How many hours have you worked on
this case?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I don't have an exact number of
4 hours. I estimate somewhere in the range of
5 30 to 50 hours in review of all the documents,
6 declarations, and depositions in preparation
7 of my declaration, but I certainly do plan to
8 sit down and tally it up. I don't have that
9 exact number right now.

10 Q. And that 30 to 50 hours, does
11 that -- is that the number of hours that
12 you've billed for this case?

13 A. So no, that is not.

14 Q. That is not?

15 A. (Indicating.)

16 Q. Okay. How many hours have you
17 billed on this case?

18 A. Again, I don't have an exact
19 number, but I think I billed somewhere between
20 20 to 25 hours so far for the work that I've
21 done, and obviously have more to submit.

22 Q. So 20 to 25 is the number that
23 you've currently submitted bills for. You
24 have outstanding hours that you haven't billed
25 for yet?

26 A. Correct.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And if you add up those currently
4 billed, plus outstanding billed, that would
5 total that 30 to 50 hours of work that you
6 previously estimated --

7 A. That's what I estimated, yes.

8 - - -

9 (Unintelligible, simultaneous
10 testimony interrupted by the certified
11 stenographer.)

12 - - -

13 CERTIFIED STENOGRAPHER: "30 to 50
14 hours" what at the end?

15 Q. 30 to 50 hours of work that you
16 previously estimated?

17 CERTIFIED STENOGRAPHER: That's correct
18 you said?

19 A. Yes, that's my estimate.

20 BY ATTORNEY BROWN-MARSHALL:

21 Q. What is your hourly rate for this
22 case?

23 A. So as I detail I think in my -- as
24 I know in my declaration, my rate is \$800 an
25 hour.

26 Q. Do you do any consulting work aside

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 from the legal work that you've done on this
4 matter and the other patent matter that you're
5 working on?

6 A. Yes, I do.

7 Q. Okay. And what is your hourly rate
8 for the consulting work that you do?

9 A. So I would say it varies between
10 around 650 to a thousand dollars an hour, but
11 in that range, depending on the nature of the
12 work.

13 Q. So of that 30 to 50 hours,
14 approximately, that you've worked on this
15 case, how much of that was spent preparing
16 your declaration?

17 A. So in essence, everything I did up
18 to the submission of my declaration was part
19 of preparing for my declaration, because I was
20 reviewing all of the important documents from
21 the case, including the declarations of
22 others, the patent, the prior art, and so I
23 would say the majority of that time has been
24 dedicated to preparing background information
25 and then actually compiling my declaration.

26 Q. So if we focus just on the drafting

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 of the declarations, so putting aside document
4 review and those types of tasks, approximately
5 how many hours have you spent drafting your
6 declaration?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So it's hard for me to give a
10 specific answer. I spent several hours, as I
11 said, reviewing documentation starting to
12 draft the declaration, going back to
13 documentation to understand exactly which
14 terminology to use, and then revising the
15 declaration.

16 So, again, I would say a large part
17 or a majority of that time was spent in
18 preparation and in evaluation or revision of
19 the declaration.

20 Q. Who wrote the first draft of your
21 declaration?

22 A. What do you mean by "first draft"?

23 Q. Well, you put pen to paper for the
24 first time, who was the person that first put
25 words on the paper?

26 A. So I believe I put the first words

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 on the paper. I submitted my initial -- I
4 wrote down my initial thoughts after
5 evaluating the prior art and submitted my
6 conclusions and my thoughts of that as an
7 email to -- maybe it was not an email, maybe
8 it was actually in person, with the trial
9 team -- with the, sorry, legal team, and then
10 we worked on expanding that and drafting it
11 into a full declaration.

12 Q. Have you prepared or assisted Merck
13 in preparing any other documents in this case
14 other than your declaration?

15 A. I don't believe so.

16 Q. Do you anticipate filing any
17 declarations in any related matters to this
18 case?

19 A. I do not.

20 Q. And, Dr. Oberstein, you said that
21 you have a copy of your declaration; correct?

22 A. That's correct.

23 Q. Okay. So we're looking at
24 Exhibit 1150, the Oberstein declaration.

25 - - -

 (Whereupon, document entitled

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 Rebuttal Declaration of Paul E. Oberstein,
4 M.D., is received and marked as Exhibit 1150
5 for Identification.)

6 - - -

7 CERTIFIED STENOGRAPHER: Number 1150.

8 BY ATTORNEY BROWN-MARSHALL:

9 Q. Dr. Oberstein, your declaration,
10 Exhibit 1150, includes a list of materials
11 considered; correct?

12 A. Which list are you referring to?

13 Q. So there is a list of materials
14 considered in your declaration; correct?

15 A. I'm sorry, my question was: Which
16 list are you referring to?

17 Q. I'm referring to the list of
18 materials considered.

19 ATTORNEY RATLIFF: I object to the form
20 of the question, as well as to the premise of
21 the question.

22 A. Perhaps you can clarify where in
23 the declaration you're referring to?

24 Q. So if you go to Page 8, just above
25 Paragraph 18, there is a section header
26 called: Materials considered.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. Yes, I'm there.

4 Q. Okay. And this is a list of the
5 materials that you considered in formulating
6 your opinions that are contained in this
7 declaration; correct?

8 A. That is correct.

9 Q. And that list also includes the
10 documents that are listed in Appendix A; is
11 that correct?

12 A. That is correct.

13 Q. With the correction that you were
14 removing Exhibits 1135 and 1137; correct?

15 A. That is correct.

16 Q. So the materials that are listed in
17 this materials considered section at
18 Paragraphs 18 and 19, and materials listed in
19 Appendix A, are those all the materials you
20 reviewed in coming to your opinions in this
21 case?

22 A. So the materials listed in the --
23 as you said, in Page 8 or Paragraph 18,
24 Section 4, and the materials in the appendix
25 were the information that I utilized to
evaluate the case and to evaluate the '393

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 patent from the perspective of the person of
4 ordinary skill, and enabled me to come to the
5 conclusion that each and every claim
6 limitation in the patent is included in the
7 prior art.

8 They were sufficient for me to make
9 that conclusion. There were other sources
10 that may have come across my awareness during
11 the preparation, but I was able to make that
12 conclusion based on the material I described
13 here.

14 Q. But you didn't list those other
15 resources that came across your awareness;
16 correct?

17 A. So I listed resources that I felt
18 were necessary for me to come to the
19 conclusion that I described in the beginning
20 of my declaration, that each and every claim
21 limitation of the '393 patent is included in
22 the MSI study record and the prior art.

23 Q. What other materials did you
24 consider that you didn't list in your
25 materials considered in your declaration?

26 A. So I don't have specific examples.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 As part of my independent research, to come to
4 my conclusions, I looked at many manuscripts,
5 and there were certainly some that I looked at
6 that were not included here, that I think did
7 not add to the strength -- were not necessary
8 for me to make that conclusion.

9 Q. So you're not relying on any of
10 those additional manuscripts to support the
11 opinions in your declaration?

12 A. That is correct.

13 Q. In your work in this case, did you
14 review any memos or depositions or documents
15 related to the case that are not listed in
16 this materials considered section?

17 A. So as I stated -- you mean -- I'm
18 sorry, can you clarify the question?

19 Q. So you previously spoke about
20 references that you reviewed that are not
21 listed in the materials considered section.
22 Did you review any case-related materials that
23 are not listed in the materials considered
24 section?

25 ATTORNEY RATLIFF: I object to the form
of the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. As I stated earlier, I did review
4 Dr. Neugut's deposition, which is not listed
5 in this list of materials considered. As I
6 stated, it did not change my conclusion in
7 this case about the underlying conclusion of
8 my declaration.

9 Q. Did you review the petition that
10 Merck filed in this case?

11 A. Which petition?

12 Q. So you understand that this is an
13 IPR proceeding which starts with a petition
14 that is filed by the petitioner?

15 A. Yes.

16 Q. Okay. Did you review Merck's
17 petition in this case?

18 A. Do you have that petition for me to
19 refresh my memory?

20 Q. No, I don't. I'm just wondering if
21 you reviewed it?

22 A. I don't recall specifically if I
23 reviewed it or not.

24 Q. Okay. Did you review any of the
25 responses that Johns Hopkins has filed in this
26 case?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. Again, can you tell me how many
4 responses there were or --

5 Q. There is two responses. There is a
6 preliminary response and then there is a
7 patent owner's response. Did you review any,
8 either of those responses?

9 A. So I certainly recall reviewing the
10 patent owner response, POR.

11 Q. Uh-huh.

12 A. I don't recall if I reviewed the
13 other one or if it was available to me.

14 Q. Okay. But you didn't list Johns
15 Hopkins patent owner's response in your list
16 of materials considered?

17 A. That's correct, because as I said,
18 the materials considered, the ones that I
19 thought were essential in me forming my
20 primary conclusion, which is that each and
21 every claim limitation in the '393 patent is
22 included in the prior art, specifically in MSI
23 study record with other prior art, and I did
24 not think that was necessary or changed my
25 conclusion.

26 Q. In your work in this case, were you

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 shown any other docs other than those listed
3 on your list of materials considered?

4 A. So as I just stated, I definitely
5 recall seeing the patent owner response, as
6 well as some other filings in front of the
7 Patent Office.

8 Q. Okay. What other filings were
9 those?

10 A. I don't recall the exact specifics
11 of any other filings in front of the Patent
12 Office.

13 Q. So aside from filings of the Patent
14 Office, were you shown any other documents,
15 other than those in your materials considered
16 list, in your course of your work in this
17 case?

18 A. And when you say "shown," what do
19 you mean by that?

20 Q. Did Merck or its attorneys provide
21 you with any additional documents?

22 A. I do not recall Merck or its
23 attorneys providing me any documents besides
24 those listed in the materials considered and
25 Appendix A.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And the patent owner's response;
4 correct?

5 A. Correct.

6 Q. Dr. Oberstein, as part of your work
7 in this case, you reviewed Dr. Neugut's
8 declaration; correct?

9 A. That is correct.

10 Q. And if you'd turn to Appendix A,
11 which is the very last couple of pages of your
12 declaration, this is a list of the exhibits
13 cited by Dr. Neugut in his declaration;
14 correct?

15 A. You're asking if they're the same
16 exhibits? Where do you want me to turn to?

17 Q. So if you're at Appendix A?

18 A. Of my declaration?

19 Q. Of your declaration?

20 A. Yes.

21 Q. These are exhibits -- these are the
22 exhibits that Dr. Neugut relied on in
23 formulating his opinions in his declaration;
24 correct?

25 ATTORNEY RATLIFF: I object to the form
 of the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. I'm sorry, these are the exhibits
4 that I relied on to prepare my declaration.

5 Q. Let me ask this a different way.

6 What is the source of the documents
7 that are listed in Appendix A?

8 A. I don't understand the question.

9 Q. How did you identify the documents
10 that you reviewed that are listed in Appendix
11 A?

12 A. Again, I -- I looked at the
13 documents that I used in preparation of my
14 declaration.

15 Q. How did you decide to look at those
16 documents?

17 A. Some of them were primary documents
18 that I found. Some were provided to me by
19 counsel. Some were referenced in other
20 people's declarations or depositions.

21 Q. Do you have a copy of Dr. Neugut's
22 declaration?

23 A. I do.

24 Q. Okay. Could you open that up?

25 ATTORNEY BROWN-MARSHALL: So this is
Exhibit 1003.

2
3
4
5
6
7
8
9
0
1
2
3
4
5
6
7
8
9
0
1
2
3
4
5

(Whereupon, document entitled Declaration of Alfred I. Neugut, M.D., Ph.D., M.P.H., is received and marked as Exhibit 1003 for Identification.)

CERTIFIED STENOGRAPHER: Number 1003.

BY ATTORNEY BROWN-MARSHALL:

Q. Dr. Oberstein, are you familiar with Exhibit 1003?

A. I did review Exhibit 1003,
Dr. Neugut's declaration.

Q. Okay. If you would turn to the back pages starting on Page 90. I'm sorry, yes, Page 90 of 97. And if you would -- so do you see on Page 90 where it says: Appendix A, and then it gives a list of exhibits?

A. Yes.

Q. Okay. And these are the exhibits that Dr. Neugut relied on in formulating his opinion?

A. That is my understanding of Appendix A and Dr. Neugut's declaration.

Q. Okay. If you would quickly compare

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 Appendix A in Dr. Neugut's declaration to
3 Appendix A in your declaration and let me know
4 if they're the same.

5 A. So I'd rather not do that quickly.
6 You want to take the time to go to each one?

7 Q. Well, the exhibits are numbered;
8 correct?

9 A. Correct, there is over 100
10 exhibits.

11 Q. So Dr. Neugut's declaration starts
12 with Exhibit 101, which is the '393 patent;
13 correct?

14 A. That is correct.

15 Q. Okay. And you understand that in
16 an IPR proceeding, that exhibits maintain
17 their exhibit numbers throughout the
18 proceeding?

19 A. Yes.

20 ATTORNEY RATLIFF: Go ahead.

21 Q. Okay. So if Exhibit 1001 in
22 Dr. Neugut's declaration is the same as
23 Exhibit 1001 in your declaration.

24 ATTORNEY RATLIFF: If that's a
25 question, I object to the form of the

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 question.

4 A. I'm just trying to clarify. Do you
5 want me to go through one by one and confirm
6 that each exhibit is either the same or not
7 the same between the two declarations?

8 Q. I don't know if it's necessary to
9 go all the way through, but your Appendix A,
10 you rely on Exhibits 1001 through 1148;
11 correct?

12 A. That is correct.

13 Q. Okay. And Dr. Neugut's
14 declaration, he also relies on Exhibits 1001
15 through 1084; is that correct?

16 ATTORNEY RATLIFF: I object to the form
17 of the question.

18 A. That is correct. Those are
19 different numbers you're just saying?

20 Q. So both you and Dr. Neugut rely on
21 Exhibits 1001 through 1084; correct?

22 ATTORNEY RATLIFF: I object to the form
23 of the question, as well as to the premise of
24 the question.

25 A. So I would need some time to go
26 through each exhibit to say whether that's

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 true. We both do quote Exhibit 1001 and
4 Exhibit 1084, if that is your question.

5 Q. So your Exhibit A includes the
6 materials that Dr. Neugut relied on in
7 formulating his declaration, the opinions in
8 his declaration; correct?

9 A. So in my declaration, I utilize
10 many of the same materials Dr. Neugut
11 utilized. Again, without going through each
12 exhibit one at a time, I can't clarify -- I
13 can't confirm whether there are any materials
14 in Dr. Neugut's declaration that are not
15 referenced in mine, and I know vice versa
16 there certainly are.

17 Q. Did you review all of the
18 references that Dr. Neugut relied on in
19 formulating his opinions?

20 A. I reviewed the references that
21 Dr. Neugut utilized in forming his opinions,
22 yes.

23 Q. Okay. And you included those on
24 your materials considered?

25 A. As I said before, included
26 information in my materials considered if I

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 thought it was helpful and important for me to
3 establish my primary conclusion, which is that
4 each and every claim limitation of the '393
5 patent was included in the MSI study record
6 and available material at the critical date of
7 July 10 of 2015.

8 Q. Dr. Oberstein, I didn't ask you
9 about your conclusions. I asked you about
10 your materials considered.

11 ATTORNEY RATLIFF: If that's a
12 question, I object to the form of the
13 question.

14 A. So my materials considered were the
15 materials I considered in formulating my
16 conclusion, so I included the things that I
17 thought were important to justify and to
18 support my primary conclusion.

19 Q. Are there any materials that
20 Dr. Neugut relied on that you decided not to
21 include in your materials considered list?

22 A. I don't recall any specific
23 examples, but again, I would have to review
24 everything he relied on and the appendix to
25 tell you whether or not there are any specific

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 examples.

4 Q. So in your declaration, you note
5 numerous opinions of Dr. Neugut that you agree
6 with; correct?

7 A. There certainly are many things
8 that I agree with Dr. Neugut and quote in my
9 declaration, yes.

10 Q. And I counted those up and there
11 are over 75 instances in your declaration
12 where you note that you agreed with
13 Dr. Neugut; correct?

14 ATTORNEY RATLIFF: I object to the form
15 of the question.

16 A. So you're asking if your count is
17 correct? I did not count them up.

18 Q. Does that sound like a reasonable
19 ballpark?

20 ATTORNEY RATLIFF: I object to the form
21 of the question.

22 A. So I don't have a reasonable
23 ballpark. I could state that I agree with
24 Dr. Neugut on many points and quote him in
25 that context when I agree in my declaration.

26 Q. All right.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Were there any opinions from
4 Dr. Neugut that you disagreed with?

5 A. So I didn't evaluate Dr. Neugut's
6 declaration with an eye to agreeing or
7 disagreeing with what he stated.

8 My role here as an independent
9 expert was to evaluate the '393 patent, and
10 from a person of ordinary skill at the
11 critical date of July 10, 2015, I evaluated
12 that each and every claim limitation in that
13 patent was previously taught in the prior art,
14 including the MSI study record. That is what
15 I described in my declaration and what I went
16 out to do. I don't have specific rebuttal or
17 comments on Dr. Neugut's declaration.

18 Q. But there is no instances in your
19 mind of issues or opinions that Dr. Neugut
20 provided that you didn't agree with?

21 A. I cannot agree with that statement
22 without giving it more serious thought and
23 going through his declaration with that
24 question in mind. That was not the task I
25 sought after in this expert testimony.

26 Q. So how did you decide which

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 opinions of Dr. Neugut's that you agreed with?

3 A. So I evaluated -- I read
4 Dr. Neugut's declaration, carefully evaluated
5 points he raised and sources that he brought,
6 and I included the things that I felt were
7 important for me and important for the
8 conclusion that I came to in this declaration.

9 Q. So you evaluated each of
10 Dr. Neugut's opinions?

11 A. So I evaluated all of the
12 information in light of the goal that I -- the
13 goal that I had, which was to give an
14 independent review of the '393 patent in light
15 of prior art.

16 Q. But you identified over 75
17 instances where you agreed with Dr. Neugut;
18 correct?

19 ATTORNEY RATLIFF: I object to the form
20 of the question.

21 A. I don't have a specific number, but
22 as I said, there are many instances in which I
23 agree with Dr. Neugut, as I stated in the
24 declaration.

25 Q. So you evaluated his opinions. You

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 identified many opinions of Dr. Neugut's with
4 which you agreed, but you didn't identify any
5 opinions from Dr. Neugut with which you
6 disagreed?

7 ATTORNEY RATLIFF: I object to the form
8 of the question, as well as to the premise of
9 the question.

10 A. So I did not say that and I do not
11 agree with your statement. I specifically
12 wrote in my declaration the points that I
13 agreed with. I did not make any listing
14 anywhere of things I didn't agree with or
15 compile such a list.

16 Q. I understand that you didn't make a
17 listing of it, but I'm asking: As part of
18 your objective evaluation where you looked at
19 Dr. Neugut's opinions, you identified ones
20 that you agreed with, but you didn't identify
21 any that you disagreed with?

22 ATTORNEY RATLIFF: I object to the form
23 of the question, as well as to the premise of
24 the question.

25 A. So, again, what I laid out here and
what I tried to be very clear about was the

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

specific objective of evaluating the prior art
and the '393 patent, coming to a conclusion of
what a person of ordinary skill as of the
critical date of July 10, 2015 would have
concluded, and my conclusion is that each and
every claim limitation in the '393 patent is
included in the MSI study record and prior
art.

10 That is what I am comfortable
11 describing in my declaration, and that's where
12 I utilized Dr. Neugut for points where I
13 agreed with him about my findings and where he
14 stated it in a similar fashion.

15 Q. So you cherry-picked the opinions
16 of Dr. Neugut that aligned with your opinion?

17 ATTORNEY RATLIFF: I object to the form
18 of the question.

19 A. So, again, I conducted an
20 independent review as an outside expert how a
21 person of ordinary skill in the arts would
22 have evaluated the prior art at the time of
23 July 10, 2015, and where Dr. Neugut's opinion
24 was similar or concurrent with what I
25 concluded, I quoted Dr. Neugut affirmatively.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. So you didn't bother evaluating
4 Dr. Neugut's declaration for opinions that you
5 disagreed with?

6 ATTORNEY RATLIFF: I object to the form
7 of the question, as well as to the premise of
8 the question.

9 A. So I do not agree with that. I
10 evaluated Dr. Neugut's declaration completely,
11 but in my declaration, I sought out to provide
12 expert testimony about the specific question
13 in front of me.

14 Q. I guess what I'm not understanding
15 is how do you objectively evaluate the
16 opinions of another and only identify opinions
17 that you agree with?

18 ATTORNEY RATLIFF: If that's a
19 question, I object to the form of the question
20 and to the premise of the question.

21 A. So I didn't testify in my
22 declaration about items that I disagreed with
23 in my evaluation with any sort of
24 comprehensiveness. I testified specifically
25 about the role of a person of ordinary skill
26 in evaluating available prior art, including

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 the MSI study record and finding taught in
4 that prior art each and every claim limitation
5 of the '393 patent.

6 Q. I didn't ask about formulating your
7 opinion. I'm asking about your assessment of
8 Dr. Neugut's opinions, and you said that you
9 made an objective assessment, correct, of
10 Dr. Neugut's opinions?

11 ATTORNEY RATLIFF: I object to the form
12 of the question.

13 A. So in my declaration, I do not give
14 an overall objective assessment about
15 Dr. Neugut or anybody else for that matter. I
16 point out areas in which other findings
17 support or build my conclusion that I came to
18 and those are the things I quote.

19 Q. I'm not asking about your
20 declaration. I'm asking about your assessment
21 of Dr. Neugut's preparation, and you said that
22 you made an objective assessment of his
23 opinions; correct?

24 ATTORNEY RATLIFF: I object to the form
25 of the question, as well as to the premise of
26 the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So prior to including any item in
4 which I quote agreeing with Dr. Neugut, I made
5 an objective assessment as to whether I agreed
6 with that opinion. It does not say what I
7 think about other things in Dr. Neugut's
8 declaration or anybody else's declaration if I
9 didn't specifically discuss them in my own
10 declaration.

11 Q. But I'm asking: When you made that
12 assessment, did you identify any opinions in
13 Dr. Neugut's declaration of which you
14 disagreed?

15 A. So I don't recall any specific
16 examples, but there were many things in
17 Dr. Neugut's declaration that I did not quote
18 or utilize in my own declaration, and so there
19 may be other things that I disagreed with in
20 that declaration. I do not -- again, as I
21 said, my role here was not to compile those or
22 critically list them, and I did not do that in
23 my declaration.

24 Q. So sitting here today, you cannot
25 identify any opinions in Dr. Neugut's
26 declaration with which you disagree?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So off the top of my head, I don't
4 have any specific examples, and I did not
5 prepare those for my declaration.

6 Q. So you can't identify them sitting
7 here today?

8 A. I want to be very clear. There may
9 be things there. I can't specifically
10 identify any items right now in which I don't
11 agree with Dr. Neugut in his declaration.

12 Q. So, Dr. Oberstein, one of the other
13 exhibits that you've listed on your materials
14 considered is the declaration of Dr. Nils
15 Lonberg; correct?

16 A. That is correct.

17 Q. And did you review Dr. Lonberg's
18 declaration?

19 A. So I did review Dr. Lonberg's
20 declaration.

21 Q. And in your declaration, you
22 include several opinions from Dr. Lonberg of
23 which you disagree; correct?

24 A. That is correct.

25 Q. And did you review any of the
26 exhibits cited by Dr. Lonberg?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. I did review some of the exhibits
4 cited by Dr. Lonberg, yes.

5 Q. Okay. Which exhibits cited by
6 Dr. Lonberg did you review?

7 A. So I cannot recall exactly examples
8 at this time, but in reviewing Dr. Lonberg's
9 declaration, and there was an exhibit that I
10 wanted to understand what he was bringing from
11 that exhibit, I would have looked up that
12 exhibit and I did that.

13 Q. But you didn't include those on
14 your materials considered list?

15 ATTORNEY RATLIFF: Are you representing
16 that to him or is that a question?

17 Q. Did you include any of the exhibits
18 cited by Dr. Lonberg that you ostensibly
19 reviewed in your materials considered list?

20 A. So I did include in my materials
21 reviewed several references that were also
22 quoted by Dr. Lonberg, for example, the MSI
23 study record or the '393 patent, as well as
24 many of these other references I talked about
25 earlier.

26 Q. Did you include any exhibits cited

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 by Dr. Lonberg that weren't included in
3 Dr. Neugut's declaration?

4 ATTORNEY RATLIFF: I object to the form
5 of the question.

6 A. Again, without going back over
7 every single exhibit in Dr. Neugut's
8 declaration, which is not my declaration, I
9 can't be certain that there are any references
10 that are included from Dr. Lonberg that were
11 not in Dr. Neugut's declaration.

12 Q. Dr. Oberstein, do you understand
13 the numbering conventions of the exhibits in
14 this case?

15 ATTORNEY RATLIFF: I object to the form
16 of the question.

17 A. So it was never explained to me. I
18 can make some conclusions based on what I've
19 seen, but I would rather not speculate.

20 Q. Well, do you understand that the
21 exhibits submitted by Merck begin with a
22 number beginning with 1, so Exhibits 1001,
23 1003, etc., are Merck exhibits?

24 A. So are you telling me that or
25 asking a question?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. So is that your understanding? You
4 said you had some understanding of the
5 numbering convention.

6 A. So it seems that way to me, but it
7 was not described to me by anyone that way, so
8 I can't verify if that's true.

9 Q. And I'll represent to you that
10 exhibits submitted by Johns Hopkins in this
11 case have exhibit numbers that begin with the
12 Numeral 2, so 2001, 2002.

13 Do you have any exhibits on your
14 materials considered list that begin with the
15 Numeral 2, so any Johns Hopkins' exhibits
16 listed in your materials considered?

17 A. I do not.

18 Q. Okay. As part of your review of
19 Dr. Lonberg's declaration, did you review any
20 exhibits submitted by Johns Hopkins
21 University, which would be the exhibits that
22 start with the Numeral 2?

23 A. So as I said earlier, yes, I did
24 review some of the exhibits that Dr. Lonberg
25 reviewed in his declaration. I cannot
26 specifically recall if they start with the

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 letter two or the letter one and whether he
4 was quoting things that have previously been
5 referenced.

6 Q. Do you understand that Dr. Lonberg
7 cited exhibits that were not included in the
8 Neugut declaration?

9 ATTORNEY RATLIFF: I object to the form
10 of the question.

11 A. Yes, I understand that.

12 Q. Okay. And did you review any of
13 those exhibits that weren't cited by
14 Dr. Neugut in his declaration?

15 A. So I can't recall specifically, but
16 I believe that I did, because I reviewed, as I
17 said, Dr. Lonberg's exhibits to look at what
18 he was quoting from those exhibits, and many
19 of those may -- well, some of them may not
20 have been included in Dr. Neugut's
21 declaration.

22 Q. How many exhibits cited by
23 Dr. Lonberg did you review?

24 A. I do not specifically recall.

25 Q. But you don't cite any of those
26 exhibits in your declaration?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question, as well as to the premise of
5 the question.

6 A. I'm sorry, what was the question?

7 Q. You don't cite any of those
8 exhibits in your declaration?

9 ATTORNEY RATLIFF: I object to the form
10 of the question, as well as to the premise of
11 the question.

12 A. So I do not include those in
13 Appendix A or in documents cited.

14 Q. So you didn't cite them in your
15 declaration?

16 A. As I said, I did not include those
17 in the list of documents that I relied on to
18 make my declaration.

19 Q. Do you think it's important in your
20 opinions in which you disagree with
21 Dr. Lonberg to address the evidence that he
22 cited in support of his opinions?

23 ATTORNEY RATLIFF: I object to the form
24 of the question, as well as to the premise of
25 the question.

26 A. So as I understood it, my

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 assignment in this case was to be an
4 independent expert, to evaluate the
5 information in the '393 patent in light of the
6 prior art for a person of ordinary skill. I
7 did that unbiased, open-minded evaluation of
8 all the information that was available to me
9 and that I could discover, and my conclusion,
10 which I outline here, is that each and every
11 claim limitation of the '393 patent was
12 included in the MSI study record and other
13 prior art at the critical date of July 10,
14 2015, and would have been taught that way to a
15 person of ordinary skill.

16 That's -- I included everything in
17 my declaration that supported me making that
18 conclusion. I did not include specific
19 critiques outside of my conclusion of other
20 experts in this case.

21 Q. So you did not address the other
22 references that Dr. Lonberg cited in support
23 of his opinions with which you disagree?

24 ATTORNEY RATLIFF: I object to the form
25 of the question.

26 A. So I cited references to support

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 the opinion that I took in this declaration
3 and included everything that I thought was
4 important to support and to back up that
5 convention that I came to in this declaration.

6 Q. But you didn't address any of the
7 pieces of evidence that Dr. Lonberg cited as
8 being contrary to those opinions; correct?

9 ATTORNEY RATLIFF: I object to the form
10 of the question, as well as to the premise of
11 the question.

12 A. So, again, I specifically looked at
13 this as an independent and open-minded
14 evaluation of the '393 patent and the prior
15 art. I did not specifically go down other
16 people's points and give a rebuttal or
17 counterargument to those points. I looked at
18 this independently utilizing the prior art,
19 and I did review Dr. Lonberg's arguments in
20 his declaration and came to the conclusions
21 that I outline in this declaration.

22 Q. So you say that you didn't
23 specifically go down other people's points and
24 give a rebuttal or counterargument to those
25 points, but you did express the opinion that

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

you disagree with Dr. Lonberg's points;
correct?

4 A. So in some parts I noted that I
5 disagreed where it was important and
6 summarized my opinion in the case. I also
7 noted some areas where I did agree with
8 Dr. Lonberg. That's not a comprehensive list
9 of every assessment of every statement of
10 Dr. Lonberg.

11 Q. But for those points where you said
12 that you disagreed, you did not directly
13 address the evidence that Dr. Lonberg relies
14 on in support of his opinions with which you
15 disagree?

16 ATTORNEY RATLIFF: I object to the form
17 of the question, as well as to the premise of
18 the question.

19 A. So I specifically explained why I
20 disagreed with Dr. Lonberg and what the points
21 of evidence were that supported my conclusion
22 that Dr. Lonberg is incorrect in the parts
23 that I disagreed with him. I quoted primary
24 sources, specifically the MSI study record, to
25 support the conclusion that I made that each

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

and every claim limitation of the '393 patent was previously taught in the MSI study record in prior art and would have been appreciated by a person of ordinary skill as of the critical date.

7 Q. But in doing so, you did not
8 evaluate any of the counterevidence that
9 Dr. Lonberg cited in support of his opinions?

10 ATTORNEY RATLIFF: I object to the form
11 of the question, as well as to the premise of
12 the question.

13	A. What do you mean by "evaluate"?
----	------------------------------------

14 Q. Well, in your declaration, you
15 don't cite to any of the evidence that
16 Dr. Lonberg cites in support of his
17 declaration; correct?

18 ATTORNEY RATLIFF: I object to the form
19 of the question.

20 A. So in the summary at least and in
21 more detail where I disagree with Dr. Lonberg
22 about specific points, I explain why I
23 disagree and why I take the opinion that I
24 came to in this declaration.

25 Q. And the support for that, for those

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 opinions where you explained why you disagree
4 and why you take the opinion that you came to,
5 those are based on materials that are listed
6 in your materials considered list; correct?

7 A. Correct, and those are similar
8 materials to those that Dr. Lonberg quoted.

9 Q. But they don't include the
10 additional evidence that Dr. Lonberg
11 identified in his declaration; correct?

12 ATTORNEY RATLIFF: I object to the form
13 of the question, as well as to the premise of
14 the question.

15 A. So I don't specifically quote
16 Dr. Lonberg's arguments in every regard.

17 Q. That wasn't my question.

18 In your declaration, you do not
19 address the additional evidence that
20 Dr. Lonberg identified in his declaration;
21 correct?

22 ATTORNEY RATLIFF: I object to the form
23 of the question, as well as to the premise of
24 the question.

25 A. So in my initial description of my
26 overall findings, I only quote the primary

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 source, which is the -- the primary source of
4 my findings, which is the MSI study record,
5 which is the same source that Dr. Lonberg
6 utilized in his declaration and disagree with
7 him in that regard.

8 Q. But the additional evidence that
9 Dr. Lonberg cited in support of his opinions,
10 with the exhibits that Johns Hopkins
11 submitted, you don't rely on any of that
12 evidence in support of your opinions in your
13 declaration; correct?

14 ATTORNEY RATLIFF: I object to the form
15 of the question, as well as to the premise of
16 the question.

17 A. So I utilized the information that
18 I think is absolutely essential to make the
19 conclusion that I concluded in this
20 declaration and quote what I think is
21 necessary to come to that conclusion. I
22 didn't quote anything else that I thought was
23 not necessary for that conclusion.

24 Q. So you evaluated the exhibits
25 submitted by Johns Hopkins on which
26 Dr. Lonberg replies and you determined that

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 they were nonessential?

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. What do you mean by "nonessential"?

6 Q. Well, you just said that "the
7 information that I think is absolutely
8 essential to make the conclusion that I
9 concluded in this declaration." So you
10 determined that some exhibits and evidence
11 were essential and some were nonessential?

12 ATTORNEY RATLIFF: I object to the form
13 of the question, as well as to the premise of
14 the question.

15 A. So I approached this as an
16 independent expert and looked at the prior
17 art, as well as the other information
18 available to me, and my conclusion from
19 reviewing the prior art was that a person of
20 ordinary skill, as of the critical date of
21 July 10, 2015, would have found information
22 and been taught by the prior art that each and
23 every claim limitation of the '393 patent was
24 previously taught, specifically in the MSI
25 study record and supporting documentation as I

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 quote. Those are the references that I then
4 put into my declaration to support that
5 conclusion.

6 Q. So, Dr. Oberstein, what do you mean
7 when you use the term "prior art"?

8 A. So generally, by prior art, I refer
9 to information that was public and published
10 and available to a person of ordinary skill at
11 the time of the critical date of the patent,
12 which in this case I utilized July 10, 2015.

13 Q. And what specific pieces of prior
14 art are you relying on for your opinions
15 contained in your declaration?

16 A. So I have a pretty extensive list
17 of what I'm relying on, which includes the
18 materials considered, but of those, I
19 specifically in my declaration review several,
20 I call, key elements, because I quote them in
21 detail, but there are, of course, more, and
22 those include the MSI study record, as well as
23 the six articles that I previously referenced,
24 which I can give you the names if you'd like.

25 Q. That's all right. We've already
26 been through those.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 How did you identify those key
4 pieces of prior art that you were just
5 discussing?

6 A. So for the most part, they were
7 identified for me by the attorneys, and then I
8 independently reviewed them to see if they
9 supported or did not support any conclusions
10 that I was likely -- or that I came to make
11 after my review of all the information.

12 Q. Uh-huh.

13 Did you identify any pieces of
14 prior art independent of the ones that were
15 provided by Merck's counsel?

16 A. Yes, I did.

17 Q. Which pieces of prior art were
18 those?

19 A. So one example I would give is
20 Exhibit 1148, which is a public listing on
21 ClinicalTrials.gov of a clinical trial of
22 pembrolizumab in patients with MSI-high
23 colorectal cancer.

24 Q. Are there any other alleged pieces
25 of prior art that you identified independent
of the list that was provided to you by

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Merck's counsel?

4 ATTORNEY RATLIFF: He didn't say
5 allege. I object to the form of the question.

6 A. I'm sorry, can you repeat the
7 question?

8 Q. So you identified Exhibit 1148 as a
9 reference of what you allege is prior art that
10 you identified independent of the list that
11 Merck's counsel gave you; correct?

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 A. That is correct.

15 Q. Okay. Are there any other pieces
16 of alleged prior art that you identified that
17 you relied on in forming your opinions in your
18 declaration, other than Exhibit 1148?

19 A. So as part of my independent
20 evaluation for this matter, I certainly
21 identified other prior art that was not
22 included in the list that Merck had provided
23 for me. I did not, as far as I recall, feel
24 that any of those would need to be included to
25 derive the conclusions that I wanted to
26 present or that came up with to present in

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 this declaration.

4 Q. So you didn't identify -- strike
5 that.

6 So you didn't rely on any other
7 additional pieces of alleged prior art that
8 you've identified in formulating your opinions
9 that are contained in your declaration?

10 ATTORNEY RATLIFF: I object to the form
11 of the question.

12 A. So I'm not sure if we're saying the
13 same thing, but I would say that the prior art
14 references that I refer to in my declaration
15 were sufficient to justify the conclusion that
16 I came to, that a person with ordinary skill
17 in the art would have found that all the
18 claims of the '393 patent are taught or
19 suggested in the MSI study record, and the
20 prior art references that I quoted, I did not
21 feel that I needed to add any more references
22 to justify and explain that conclusion.

23 Q. And those were the same conclusions
24 that Dr. Neugut reached; correct?

25 A. So there are many similarities
 between me and Dr. Neugut. I'm not sure that

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 we say the exact same thing in every regard.

4 I don't think we do actually.

5 Q. Okay. Well, where do you differ
6 from what Dr. Neugut says?

7 A. As I said earlier, I don't have
8 specific examples and did not evaluate whether
9 what I was saying was the same thing as
10 Dr. Neugut. I came to my independent
11 conclusion, and where Dr. Neugut had described
12 a similar conclusion, I referenced his
13 conclusion.

14 Q. So you and Dr. Neugut don't have
15 the same opinions, but you can't identify any
16 places where they're different?

17 ATTORNEY RATLIFF: I object to the form
18 of the question, as well as to the premise of
19 the question.

20 A. Again, my role here was not to
21 evaluate Dr. Neugut's opinions or to judge
22 them. It was to formulate an independent
23 opinion. It may be that we have similar
24 opinions or the same opinion. I did not
25 evaluate that. I came to my independent
26 conclusion, and where Dr. Neugut had said

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 something that was similar to what I wanted to
4 write, I referenced his statement of that.

5 Q. So your independent opinion just
6 happens to rely on the same list of prior art
7 that Dr. Neugut relied upon; correct?

8 A. So my independent opinion came from
9 a review of the prior art. It also reviewed,
10 as I describe here, many declarations and
11 depositions and other pieces of information,
12 and my conclusion from that prior art was that
13 each and every claim limitation of the '393
14 patent was previously taught and would have
15 been appreciated by a person of ordinary skill
16 as of July 10 of 2015.

17 ATTORNEY RATLIFF: And, counsel, we've
18 been going over for an hour, so let's take a
19 break.

20 THE WITNESS: That would be great.

21 ATTORNEY BROWN-MARSHALL: Okay.

22 CERTIFIED STENOGRAPHER: Off the
23 stenographic record at 9:04 a.m.

24 - - -

25 (Whereupon, a short recess was
taken.)

— — —

CERTIFIED STENOGRAPHER: Back on the
stenographic record at 9:16 a.m.

BY ATTORNEY RATLIFF:

Q. Dr. Oberstein, did you review the
declaration of Dr. Richard Goldberg?

A. Yes, I did.

Q. And did you review any of the exhibits cited by Dr. Goldberg, and for the record, what are you looking at, Dr. Oberstein?

A. Dr. Goldberg's declaration.

Q. And that is Exhibit Number -- it should be in the corner?

A. 2090. Yes, I did look at some of the references that Dr. Goldberg quoted.

Q. Okay. Which ones?

A. I don't recall specifically right now. It's quite some time ago when I reviewed this, and as I said, when I saw something that I wanted to clarify, I looked it up.

Q. Okay. But you don't list any of those exhibits on your materials considered; correct?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So some of those exhibits are
6 overlapped with what I quoted. I'm sorry, I
7 don't understand the question.

8 Q. Okay. Which of Dr. Goldberg's
9 exhibits are you relying on in formulating the
10 opinions in your declaration?

11 A. So I relied on the exhibits that I
12 referenced in my declaration to formulate the
13 opinion in my declaration. Where Dr. Goldberg
14 quotes the same exhibits, we share those
15 exhibits.

16 Q. Okay. So you're not relying on any
17 new exhibits identified by Dr. Goldberg in his
18 declaration?

19 ATTORNEY RATLIFF: I object to the form
20 of the question.

21 A. So I only included the exhibits
22 that I thought were -- that I relied on to
23 come to my conclusion in my declaration. I
24 didn't include anything else that came from
25 other sources that I did not think were
necessary to explain and justify my

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 conclusion.

3 Q. And, Dr. Oberstein, you reviewed
4 the declaration of Dr. Dung Le; correct?

5 A. I did, yes.

6 Q. Okay. Did you review any of the
7 exhibits cited by Dr. Le?

8 And just for the record,
9 Dr. Oberstein, what are you looking at right
10 now?

11 A. I'm looking at one of Dr. Le's
12 declarations.

13 Q. And what's the exhibit number?

14 A. 20 -- I'm sorry, 1145.

15 I did not rely on any exhibits
16 quoted by Dr. Le that were not included in the
17 exhibit list that I utilized for my
18 declaration.

19 Q. So, Dr. Oberstein, you rely on what
20 you describe as the MSI-high study record,
21 Exhibit 1005; correct?

22 A. Yes, I reference that extensively
23 in my declaration.

24 Q. When was the first time that you
25 read that exhibit?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. That exhibit was something that I
4 reviewed in the summary after Merck reached
5 out to me about representation in this case.
6 I don't recall if I saw that exhibit prior, in
7 the course of my regular research in clinical
8 activities.

9 Q. And you also rely on the Pernot
10 exhibits, Exhibit 1006; correct?

11 A. That is correct.

12 Q. Okay. When was the first time that
13 you saw the Pernot exhibit?

14 A. Again, I know that I was made aware
15 of that exhibit after I engaged with Merck
16 about performing an evaluation for this case.
17 I don't recall if 10 years ago or 15 years ago
18 I saw that exhibit as well.

19 Q. So you have no recollection of
20 encountering the Pernot exhibit prior to your
21 work on this case?

22 A. I have no specific recollection. I
23 look at many articles over the course of time
24 and it was over a decade ago, so I can't say I
25 specifically recall it, but there is a chance
I did see it, I just don't specifically recall

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 that.

4 Q. And then you also rely on what you
5 called the Chapelle article; correct?
6 Exhibit 1007?

7 A. That is correct.

8 Q. And the author's name is actually
9 de la Chapelle; correct?

10 A. That is correct.

11 Q. And he's a professor at Ohio State
12 University?

13 A. He was a professor at Ohio State.
14 I don't know what he's currently doing.

15 Q. Okay. And you went to medical
16 school at Ohio State; correct?

17 A. That is correct.

18 Q. Did you ever encounter Professor
19 de la Chapelle while you were there?

20 A. What do you mean by "encounter"?

21 Q. Did you take a class from him?

22 A. So it was a few years ago. I don't
23 recall taking a class with him, but I do
24 recall hearing him lecture and hearing about
25 some of the work done in his lab.

26 Q. And when was that lecture?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I recall in the summer of 2003,
4 I think.

5 Q. And that was while you were a
6 medical student at Ohio State?

7 A. I'm sorry, let me get my dates
8 right. I apologize. Yeah, in the summer of
9 2003 is what I recall.

10 Q. Okay. And was that during your
11 time as a medical student at Ohio State
12 University?

13 A. Yes.

14 Q. Okay. So other than attending that
15 lecture by Dr. de la Chapelle, did you have
16 any other contact with him while you were at
17 Ohio State?

18 A. My recollection of over 20 years
19 ago is that at some point, I reached out and
20 had an email communication with
21 Dr. de la Chapelle about doing research in his
22 laboratory. I did not do research at his
23 laboratory, so as I recall, he either didn't
24 respond to me or there was no available
25 opportunity.

26 Q. Okay. So other than that email

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 outreach and attending the lecture by
4 Dr. de la Chapelle, did you have any other
5 contact with him while you were at Ohio State?

6 A. Not that I recall.

7 Q. You also rely on the Steinert
8 exhibit, which is Exhibit 1008?

9 A. That is correct.

10 Q. When was the first time that you
11 read the Steinert exhibit?

12 A. So as I recall, the first time I
13 read that was the summer after I was engaged
14 to evaluate this case.

15 Q. And you also rely on the Salipante
16 exhibit, which is Exhibit 1009 -- oh, no,
17 sorry. Correct that. You also rely on the
18 Salipante exhibit, which is Exhibit 1010;
19 correct?

20 A. I have to confirm the numbers.
21 That is correct.

22 Q. When was the first time you read
23 the Salipante exhibit?

24 A. Again, I don't recall specifically
25 having read it prior to engaging in this
26 review in the summer of 2024.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And you also rely on the Hamid
4 exhibit, which is Exhibit 1011; correct?

5 A. That is correct.

6 Q. Okay. And when was the first time
7 that you read the Hamid exhibit?

8 A. So I have recollection of reading
9 the Hamid exhibit when it came out in 2013,
10 but I certainly reviewed it again this summer
11 in 2024 after being engaged to provide expert
12 testimony in this case.

13 Q. Did you review each of the
14 references listed in your materials considered
15 in Paragraphs 18 and 19 and in Appendix A?

16 A. I'm sorry, can you say that again?

17 Q. Did you review each of the
18 references listed in your materials considered
19 in Paragraphs 18 and 19 and in Exhibit A?

20 A. Yes, I did.

21 Q. Okay. Did you read each one cover
22 to cover?

23 A. So I don't think I read everything
24 in Appendix A cover to cover. I think the
25 ones that I quoted here specifically, I did
 read, as you say, cover to cover, meaning

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 thoroughly. There are some others that
4 were -- potentially I looked at the critical
5 elements that were quoted by other people in
6 the case to verify that it was there and that
7 it was the right context, but I can't say that
8 I reviewed them in detail or can recall all
9 the specific details.

10 Q. And in addition to the references
11 listed in your materials considered, you also
12 looked at some of the references cited by
13 Dr. Lonberg and Dr. Goldberg; correct?

14 A. That is correct.

15 Q. Okay. How many hours did you spend
16 reviewing references that are -- strike that.

17 How many hours did you spend
18 reviewing references in total for this case?

19 A. So I can't recall a specific number
20 of hours. I think pertinent to your earlier
21 questions about how many hours I spent in
22 review, as I review all of this, I think
23 the -- I have to tally up all the hours. I
24 spent quite a considerable amount of time in
25 reviewing records.

26 Q. But it's not more than 30 to 50

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 hours; correct?

4 A. So I -- I -- I think I have to
5 clarify and go through and count up the exact
6 time. I can't give you an exact number of
7 time based on the fact that I haven't tallied
8 that up yet.

9 Q. But it was your testimony that your
10 total hours spent on this case is 30 to --
11 approximately 30 to 50 hours; correct?

12 A. Correct.

13 Q. Okay. So the number of hours that
14 you spent reviewing can't be more than the
15 total number of hours; correct?

16 A. Correct. So that was an
17 approximate number, and I think that as I go
18 up and tally my numbers, it certainly may
19 change.

20 Q. Do you know how many pages are
21 included in all the references you've listed
22 in your materials considered?

23 A. I do not know how many pages.

24 Q. So we added it up and it's over
25 7600 pages of references.

26 ATTORNEY RATLIFF: If that's a

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 question, I object to the form of the
4 question.

5 Q. So you reviewed over 7600 pages of
6 references in less than 30 to 50 hours;
7 correct?

8 ATTORNEY RATLIFF: So now it sounded
9 like a representation. So I object to that
10 representation, and I'll object to the form of
11 the question.

12 A. So I would not say that. I think
13 that I did keep -- did review all the
14 information that I said I reviewed or I
15 described as reviewing, and I have to count up
16 the hours, and it may turn out that it was
17 more than I anticipated of 30 to 50 hours.

18 Q. But that 30 to 50 hours, even if
19 it's more, also includes the time that you
20 spent working on drafting your declaration;
21 correct?

22 A. That is correct. As I said,
23 reviewing these records had a critical role in
24 my mindset in drafting my declaration.

25 Q. And even though they played a
critical role, you still spent less than 30 to

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 50 hours reviewing 7600 pages -- over 7600
4 pages worth of references?

5 ATTORNEY RATLIFF: I object to the form
6 of the question, as well as to the premise of
7 the question.

8 A. So as I said, I didn't keep an
9 exact -- I don't have in my mind an exact
10 tally of the amount of time I spent, and it's
11 very possible that I spent more than 30 to 50
12 hours when I add it all up, including the
13 review of the records and the preparation of
14 my declaration.

15 Q. Did you perform a literature search
16 in conjunction with your work in this case?

17 A. What do you mean by a "literature
18 search."

19 Q. Did you search for additional
20 references other than the ones provided for
21 you by Merck's attorneys?

22 A. Yes, I did.

23 Q. Okay. And how did you go about
24 performing that literature search?

25 A. So generally, a few different ways.
26 One is by utilizing a site called PubMed,

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 where we have a collection of many or most
4 available public published articles and
5 putting in keywords, such as microsatellite
6 unstable, colon cancer --

7 - - -

8 (Clarification requested by the
9 stenographer.)

10 - - -

11 A. Microsatellite unstable, colon
12 cancer, immunotherapy, other keywords that
13 would help identify articles.

14 Another part is by going down the
15 reference list of articles that I identified
16 to look at what they're referring to to see
17 look -- critically here it was the timing of
18 when articles were published to know what
19 might be included in the record that was
20 available to a person of ordinary skill as of
21 July 10, 2015.

22 I also look at other professional
23 references that we use, such as a site called
24 UpToDate, which is essentially an online
25 encyclopedia of medical knowledge.

26 Q. And which of your materials

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 considered were identified by that literature
4 search that you performed?

5 A. So I essentially found additional
6 references that I thought were relevant, but
7 none of them were necessary, in addition to
8 what I described here, to justify and come to
9 the conclusion that I came to that the prior
10 art as of July 10, 2015 described each and
11 every claim limitation in the '393 patent,
12 including specifically the MSI study record
13 and other prior art.

14 Q. So you don't rely on any additional
15 articles you identified via a literature
16 search in formulating your opinions in your
17 declaration?

18 A. I rely just on the articles that
19 were laid out here in materials considered.

20 Q. And none of those were articles
21 that you identified via a literature search?

22 A. I gave you one example prior of
23 something in Appendix A that I identified
24 through a search of a clinical trial record,
25 but outside of that, these were not ones that
I independently identified through a

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
literature search.

3 Q. And, Dr. Oberstein, you're not
4 relying on any regulatory filings from Merck
5 with the FDA in formulating your opinions in
6 your declaration; correct?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. What do you mean by "regulatory
10 filings"?

11 Q. So you understand that
12 pharmaceutical companies need approval from
13 FDA to sell a product; correct?

14	A. Pharmaceutical companies?
----	------------------------------

15	Q.	Yes.
----	----	------

16 A. That is correct.

17 Q. Okay. And you understand that
18 Merck has approval from FDA to sell Keytruda;
19 correct?

20 A. That is correct.

21 Q. Okay. Did you review any
22 regulatory -- sorry. Strike that.

23 Did you review any regulatory
24 filings from Merck associated with FDA
25 approval for Keytruda?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So I make reference a few times to
6 a package insert of Keytruda. Is that
7 something you would consider a regulatory
8 filing?

9 Q. So, yes, that could be.

10 So other than the package insert,
11 did you review any regulatory filings from
12 Merck associated with FDA approval for
13 Keytruda?

14 ATTORNEY RATLIFF: I object to the form
15 of the question.

16 A. So I do not recall looking at any
17 that were in addition to the package insert
18 that I described in my Appendix A.

19 Q. Okay. So other than the package
20 insert, you don't rely on any regulatory
21 filings from Merck associated with FDA
22 approval for Keytruda; correct?

23 ATTORNEY RATLIFF: I object to the form
24 of the question.

25 A. So I don't believe I have any of
those listed in my materials considered.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Okay. And so you didn't rely on
4 them?

5 A. If they're not listed in the
6 materials considered, I didn't rely on them.

7 Q. Okay. Have you had any
8 conversations with any other experts engaged
9 by Merck in this case?

10 A. Yes, I had two phone conversations
11 with an expert, Dr. Sheridan I believe.

12 Q. Okay.

13 A. And I'm very poor at names, so I
14 apologize, but I think I got it.

15 Q. Okay. So when did that first
16 conversation with Mr. Sheridan occur?

17 ATTORNEY RATLIFF: Dr. Sheridan.

18 ATTORNEY BROWN-MARSHALL: Oh, it's
19 Dr. Sheridan.

20 Q. Apologies. Dr. Sheridan.

21 A. I don't recall the exact date, but
22 it was, I think, in early January or late
23 December, so in the last couple of months.

24 Q. Okay. And who participated in that
25 conversation?

26 A. So it was a Zoom or video

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 conference, so there were several other people
3 on the line. I know some of them I recognize
4 from this team at Paul Hastings. I can't give
5 you every name. Dr. Sheridan, and I don't
6 know if there were other people from
7 Dr. Sheridan's team on the call.

8 Q. And what was discussed on that
9 first conversation with Dr. Sheridan?

10 A. So as I recall, Dr. Sheridan asked
11 me for background information about the
12 diagnosis, staging, and treatment of colon
13 cancer, as well as the way MSI-high colon
14 cancer might be diagnosed and the treatment
15 that you would utilize in that setting,
16 including immunotherapy, such as
17 pembrolizumab.

18 Q. Anything else discussed on that
19 first call?

20 A. So we had a lengthy conversation.
21 I don't recall every single detail. I have
22 some recollection that we discussed some of
23 the percentages of different staging, meaning
24 what percentage of patients have Stage 1,
25 Stage 2, and things of that nature, which is

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 relevant, of course, for the treatment
3 described.

4 I also -- I had a second
5 conversation with Dr. Sheridan where I know it
6 was right before I submitted my declaration
7 and reviewed with him some of the conclusions
8 that I had made in my declaration. I don't
9 know if I gave him any of that preliminary
10 information in the first call.

11 Q. So you said that the first call was
12 lengthy. Approximately how long did it last?

13 A. I'd say 30 to 40 minutes.

14 Q. And you said the second
15 conversation with Dr. Sheridan occurred -- was
16 it the day that you signed your declaration?

17 A. It was certainly not the day I
18 signed it, but it was, I think, that week.

19 Q. Okay.

20 A. So I submitted my declaration on a
21 Friday. It was some day earlier in that week,
22 if I recall correctly.

23 Q. Okay. And who attended that second
24 conversation with Dr. Sheridan?

25 A. So a very similar cast of

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

characters, attorneys that I know from Paul
Hastings, and again, I don't know if there
were attorneys from Merck on that call, and
Dr. Sheridan, of course.

6 Q. And what was discussed on that
7 second conversation?

8 A. So Dr. Sheridan had some follow-up
9 questions for me, which I recall had more to
10 do with the specific utilization of
11 immunotherapy, such as pembrolizumab or
12 nivolumab for MSI-high colon cancer patients,
13 and I reviewed with him some of my
14 understanding if -- the MSI study record and
15 how in my opinion to a person of ordinary
16 skill in the art an MSI study record
17 anticipated and taught each and every claim of
18 the '393 patent.

19 Q. Did you and Dr. Sheridan discuss
20 anything else on that second call?

21 A. It's very possible. I don't recall
22 every single detail that we discussed.

23 Q. Approximately how long did that
24 second call with Dr. Sheridan last?

25 A. As I recall, it was also around 30

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 minutes. Slightly shorter maybe.

3 Q. And have you spoken with Dr. Neugut
4 in conjunction with this case?

5 A. I have not.

6 Q. Do you have an understanding of why
7 you were asked to put in a declaration
8 responding to Johns Hopkins' patent owner
9 response instead of Dr. Neugut?

10 A. I do not.

11 Q. Have you had any conversations with
12 Ross Pierce in conjunction with this case?

13 A. What is Ross Pierce?

14 Q. He was a potential expert
15 identified by Merck.

16 ATTORNEY RATLIFF: I object to the form
17 of the question.

18 A. I don't think so.

19 Q. The name doesn't ring a bell?

20 A. No.

21 Q. Okay.

22 A. But I already said names are not
23 the best, but I do not recall that name or a
24 conversation with anyone outside of this
25 counsel about this case.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And did you have a conversation
4 with John Bone in conjunction with this case?

5 A. John who?

6 Q. Bone, B-O-N-E.

7 A. I don't think so.

8 Q. So other than Dr. Sheridan, have
9 you spoken with anyone else in conjunction
10 with this case?

11 A. I do not recall speaking to anyone
12 outside of the legal team from Merck and Paul
13 Hastings, who are here, and their colleagues.

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

16 A. I got a good night's sleep. I read
17 over my declaration and skimmed, as you
18 pointed out by the many pages, some of the
19 other pieces of prior reference and sources
20 that I quote in my declaration.

21 Q. Did you meet with counsel?

22 A. And I met with counsel and reviewed
23 some of that.

24 Q. How many times did you meet with
25 counsel?

26 A. Overall or specifically in this

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 context?

4 Q. In preparation for the deposition
5 today?

6 A. I think we met four times.

7 Q. Four times? Okay.

8 When was that first meeting with
9 counsel?

10 A. Friday of this past week I believe.

11 Q. Okay. And approximately how long
12 did that meeting last?

13 A. Approximately two hours.

14 Q. Okay. And who was in attendance at
15 that meeting?

16 A. So that was a Zoom as well. So the
17 attorneys from Paul Hastings here were present
18 there and I think that was it.

19 Q. And when did the second meeting
20 with counsel in preparation for this
21 deposition occur?

22 A. The second meeting was this past
23 Sunday.

24 Q. Okay. And --

25 A. Do you need the date or no? I
don't remember the date, but what's today?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Today is the 19th.

4 A. So perhaps the 16th, if that's
5 correct.

6 Q. Okay. And how long did you meet on
7 Sunday the 16th?

8 A. For roughly three to four hours.

9 Q. And who was in attendance at that
10 meeting?

11 A. Again, the same group from Paul
12 Hastings, and I think representatives from
13 Merck might have been on the line.

14 Q. Okay. And was that also via Zoom?

15 A. That was done in person.

16 Q. That was done in person, okay, and
17 when did the third meeting occur?

18 A. Monday.

19 Q. Okay. How long did you meet on
20 Monday?

21 A. Also around four or five hours.

22 Q. Okay. And who was in attendance at
23 that meeting?

24 A. The same, the same crew, Paul
25 Hastings and Merck attorneys.

26 Q. And the fourth meeting?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. The fourth meeting was yesterday,
4 Tuesday.

5 Q. Okay. And how long did that
6 meeting last?

7 A. Around two hours.

8 Q. And who was in attendance at that
9 meeting?

10 A. Again, the same group from Paul
11 Hastings and Merck attorneys.

12 Q. And was that in person or on Zoom?

13 A. That was also in person.

14 Q. Did you meet with or speak with
15 anybody other than counsel to prepare for your
16 deposition today?

17 A. No, I did not.

18 Q. Dr. Oberstein, you have a medical
19 degree from Ohio State University; correct?

20 A. That is correct.

21 Q. And you graduated in 2006?

22 A. That is correct.

23 Q. Okay. And then after that, you did
24 a residency in internal medicine at Temple
25 University Hospital; correct?

26 A. That is correct.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. What years were you at Temple
4 University?

5 A. 2006 to 2009.

6 Q. And then after that, you did a
7 fellowship in hematology and oncology at
8 Columbia, New York; correct?

9 A. That's correct. There is a break
10 in between that. Do you want me to add that
11 information?

12 Q. Sure.

13 When was the break?

14 A. So from 2009 to 2010, as well as
15 prior and after, I worked as a hospitalist.
16 So I was an internal medicine certified
17 doctor, and I worked in a hospital essentially
18 moonlighting, meaning covering shifts to
19 provide internal medicine care.

20 Q. But you weren't providing oncology
21 care when you were moonlighting as an
22 internist; correct?

23 A. I wasn't providing independent
24 care.

25 Q. And you were working under the
 supervision of another doctor?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. No. I was -- I was providing care
4 independently for internal medicine issues.

5 Q. Okay. And what sorts of internal
6 medicine issues were you treating when you
7 were working as a hospitalist?

8 A. Heart attacks, infections, people
9 who couldn't breathe, pneumonia, things like
10 that.

11 Q. Okay. So after your break when you
12 were working as an internist, then after that
13 you did the fellowship?

14 A. That's correct.

15 Q. In oncology at Columbia; correct?

16 A. That's correct.

17 Q. Okay. Which years were that?

18 A. 2010 to 2013.

19 Q. And do you have any training in
20 immunology?

21 A. So what do you mean by "training"?

22 Q. Let's start at medical school, did
23 you receive any instruction or training on
24 immunology?

25 A. Yes. So immunology is a basic
course taught in medical school.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Okay. So you had the basic course
4 of immunology in medical school.

5 After medical school, did you
6 receive any instruction or training in
7 immunology?

8 ATTORNEY RATLIFF: I object to the form
9 of the question, as well as to the premise of
10 the question.

11 A. So, yes, during my fellowship, I
12 did a subsequent fellowship in clinical trial
13 design and patient-oriented research. I took
14 graduate-level classes in immunology at
15 Columbia.

16 Q. At Columbia.
17 Do you have any training in cancer
18 genomics?

19 A. I have basic training in cancer
20 genomics as part of medical school and my
21 fellowship training, but I don't have any
22 advanced training in cancer genomics.

23 Q. What did the training in immunology
24 that you received during your fellowship
25 entail?

26 A. Graduate-level classes and subject

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 matters about immunology, specifically
4 immunology of cancer.

5 Q. And you're currently employed as
6 the service chief in the GI oncology practice
7 with the Perlmutter Cancer Center at
8 NYU Langone Health; correct?

9 A. That is correct.

10 Q. Did you audition for their Super
11 Bowl commercial?

12 A. On the record, I did not.

13 Q. Okay.

14 A. But I was featured in a separate
15 commercial that we're hoping will run soon,
16 where they got a lot of pushback, so I don't
17 know what's going to happen.

18 Q. Okay. We'll have to keep an eye
19 out.

20 A. So watch out for me.

21 Q. Okay. How long have you been
22 employed by NYU Langone Health?

23 A. Seven years. I think March 1 is my
24 anniversary, so it will be seven years on
25 March 1.

26 Q. And which years? What years does

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 that span?

4 A. March 1, 2018 to today.

5 Q. And you are currently a practicing
6 medical oncologist focused on GI cancers,
7 especially colorectal, pancreatic, and gastric
8 cancers; correct?

9 A. That's correct.

10 Q. When did you first begin treating
11 cancer patients?

12 A. So in, I would say, July of 2010 is
13 when I started treating cancer patients.

14 Q. And that was when you began your
15 fellowship in oncology?

16 A. That's correct.

17 Q. And when did you start focusing on
18 GI cancer patients?

19 A. So actually, I would say within six
20 months of that time. Most fellowships,
21 including the one I did, consist of a small --
22 not a small, but a period of time of clinical
23 knowledge and expertise and research time, and
24 so my research time, which I started within
25 six months of starting fellowship, was focused
 on GI cancers, and that's where it became my

3 focus.

4 Q. And do you treat your GI cancer
5 patients with immune checkpoint inhibitors?

6 A. When it's appropriate, absolutely.

7 Q. And which immune checkpoint
8 inhibitors do you prescribe to your patients?

9 A. So I currently prescribe several
10 FDA approved immune checkpoint inhibitors, and
11 I also engage in clinical trials where we use
12 many checkpoint inhibitors that are not FDA
13 approved or not yet FDA approved.

14 Q. Okay. So let's put aside the
15 clinical trials for a minute, and just talking
16 about the FDA approved immune checkpoint
17 inhibitors that you prescribe.

18 Which specific ones do you
19 prescribe to your GI cancer patients?

20 A. You'd like a list?

21 Q. Sure.

22 A. Nivolumab and ipilimumab;
23 pembrolizumab; dostarlimab. Those are
24 medication, I don't remember the current name,
25 but tremelimumab. There is a drug that I
 think used to be called MD4736 that now has

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 been approved and has a brand name. I don't
4 recall the brand name, but those are the ones
5 that I recall off the top of my head. There
6 probably are more.

7 Q. And do you prescribe the same
8 immune checkpoint inhibitors to, let's say, a
9 gastric cancer patient as you would prescribe
10 to a pancreatic cancer patient?

11 A. So sometimes we do and sometimes we
12 don't. It depends on why we're giving the
13 immune checkpoint inhibitors, what the
14 indication is, what features of that person
15 are, and what the FDA approval is.

16 Q. So when you prescribe an immune
17 checkpoint inhibitor to one of your GI cancer
18 patients, you prescribe those under an
19 indication that is listed on the label of the
20 drug; correct?

21 ATTORNEY RATLIFF: I object to the form
22 of the question.

23 A. So not necessarily. We often do,
24 but there are times we use medications,
25 quote/unquote, off-label.

26 Q. And when would you use an immune

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 checkpoint inhibitor off-label with one of
4 your GI cancer patients?

5 A. So there may be an instance where
6 one is concerned that an approved
7 immunotherapy has side effects that are
8 intolerable and that another immunotherapy
9 might be more tolerable, and we would use that
10 instead or based on insurance issues,
11 sometimes where an insurance company will
12 approve one and not the other. There could be
13 other factors as well.

14 Let's say treating patients, you
15 know, is quite dependent on the individual
16 patient and the individual circumstances.

17 Q. When did you first start
18 prescribing immune checkpoint inhibitors for
19 your GI cancer patients?

20 A. So I don't have an exact
21 recollection of when I first prescribed the
22 medication. I can't say more than that.

23 Q. Do you remember was it during your
24 fellowship?

25 A. I don't recall -- I recall
 utilizing immune checkpoint medications on

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 clinical trials during that time period, but I
4 don't recall the exact date.

5 Q. Okay. What clinical trials related
6 to utilizing immune checkpoint inhibitors did
7 you participate in during your fellowship?

8 A. So I don't recall all the exact
9 specifics right now, but as I mentioned
10 earlier, we were certainly doing an immune
11 therapy study of what's called maintenance
12 immunotherapy with a drug made by a company
13 called MedImmune that I was engaged in and was
14 an investigator in and treated patients with
15 in around that time period of 2013 to 2014.

16 Q. Okay.

17 A. I wish I can give you more
18 specifics, but I can't.

19 Q. Okay. Were you involved in any
20 clinical trials related to pembrolizumab?

21 A. Ever?

22 Q. So let's start off with during your
23 fellowship, were you involved with any
24 clinical trials related to pembrolizumab?

25 A. I don't believe so.

 Q. And prior to 2015, were you

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 involved in any clinical trials related to
4 pembrolizumab?

5 A. So I don't recall exactly when, but
6 I know that as soon as pembrolizumab obtained
7 its first approval in melanoma, its use became
8 quite widespread in clinical trials, and I was
9 definitely involved in clinical trials at that
10 point. I don't have the specific dates for
11 when they started. I think -- I know it was
12 around that time period since the approval
13 came prior to 2015.

14 Q. And do you remember which types of
15 cancer were involved in those pembrolizumab
16 clinical trials that you participated in?

17 A. So I don't recall exactly. I only
18 treat GI cancer, so it was certainly one of
19 those, but I can't recall the exact studies I
20 was involved in at that time period.

21 Q. Okay. Were you -- prior to 2015,
22 were you involved in any clinical trials
23 related to treating MSI-high cancer with
24 pembrolizumab?

25 A. I don't specifically recall if any
of the trials I was involved in had specific

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

cohorts for MSI-high patients.

3 I certainly treated colon cancer
4 patients in clinical trials, and they would
5 have been included if the trial wrote it that
6 way, but I don't have a specific recollection.

7 Q. And when you say that you treated
8 colon cancer patients in clinical trials, do
9 you remember which drug was involved in those
10 clinical trials?

11 A. So, again, I don't have the final
12 dates I would say in my head. I know I was
13 involved in a colon cancer trial that would
14 have been a drug called Celecoxib around that
15 time period, and the question was whether that
16 has utilization for colon cancer patients, but
17 I don't recall their specifics.

18 Q. Prior to 2015, were you involved in
19 any clinical trials relating to the use of
20 pembrolizumab in colon cancer patients?

21 A. So as I said before, I don't
22 recall. It's possible, but I can't recall
23 specifics.

24 Q. Have you been involved with any
25 clinical trials related to the use of

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 pembrolizumab in treating colorectal cancer
4 patients since 2015?

5 A. I don't recall specifically.

6 Q. Okay. But you have been involved
7 in clinical trials involving the use of
8 pembrolizumab to treat GI cancers; correct?

9 A. Absolutely.

10 Q. Okay. Which GI cancers?

11 A. So I could speak to the trials that
12 I wrote, which I'll try to remember well, but
13 I -- in 2016, I started a clinical trial,
14 wrote and designed a clinical trial utilizing
15 pembrolizumab for the treatment of gastric
16 cancer, stomach cancer.

17 I've also written studies in
18 pancreatic cancer, and I've certainly -- with
19 pembrolizumab and been involved in other
20 studies with pembrolizumab both in stomach
21 cancer, liver cancer, and something called
22 cholangiocarcinoma or bile duct cancer.

23 Q. And when you say that you wrote a
24 clinical trial, what do you mean by that?

25 A. I mean, that I collaborated with
26 the team to -- I serve as a principal

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 investigator and thus collaborated with the
4 team to design, write, and submit a clinical
5 trial for approval.

6 Q. What's involved in writing a
7 clinical trial?

8 ATTORNEY RATLIFF: I object to the form
9 of the question.

10 A. That is a very broad question.

11 Q. Okay. Just at a high level.

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 A. So, again, it is a very complicated
15 question. Clinical trials have many specific
16 requirements so that they would be understood
17 and describe the rationale, the risks, the
18 inclusion criteria, the analysis. And so
19 writing the clinical trial involves being
20 responsible for the teams that collaborate
21 with all the different parts of putting
22 together a clinical trial.

23 Q. And you mentioned that as a
24 principal investigator, you were involved with
25 submitting a clinical trial for approval.
What's involved with submitting a clinical

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
2 trial for approval?

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So I was specifically referring to
6 getting it approved at one institution so that
7 one can enroll patients, and at a minimum,
8 that involves, at a minimum, submitting the
9 study and some rationale for the study to a
10 scientific review committee, as well as an
11 institutional review board, or IRB, to obtain
12 approval for that study.

13 In most institutions, like the ones
14 I've practiced in, there are many other layers
15 of requirement to understand how the funding
16 and the resources, the feasibility, patient
17 population, there is a lot of variables that
18 go into those decisions.

19 Q. And have you been involved in
20 dealing with those other variables in the
21 clinical trials that you have participated in?

22 A. So, yes, so certainly in my role
23 currently I'm the director of the GI disease
24 management group at NYU, DMG. And what that
25 role essentially means is that if any

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 investigator within GI cancers has a protocol,
4 it has to go through our committee to
5 determine whether all of those steps are going
6 to be met adequately.

7 Q. Do you prescribe Keytruda to the
8 colorectal cancer patients that you treat?

9 A. To some of them when appropriate.

10 Q. And how do you determine when it's
11 appropriate to prescribe Keytruda to a
12 colorectal cancer patient?

13 ATTORNEY RATLIFF: I object to the form
14 of the question. Expert opinion.

15 A. So, again, that is a very broad and
16 long discussion. I can only reiterate that,
17 you know, almost everything we do is based on
18 teams and collective knowledge.

19 So generally, either we're relying
20 on what's printed, so we go to clinical
21 trial -- I'm sorry, to NCCN or compendia
22 guidelines, which are expert opinion, or like
23 at NYU, we have what are called tumor boards,
24 where we discuss complicated patients, and the
25 discussion will involve literature that's
 known, the experience of different

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 investigators, the health of the patient, and
4 make a determination whether this is a
5 medication that would be likely to benefit and
6 it's indicated for that patient.

7 Q. Do you routinely test your
8 colorectal cancer patients for MSI-high?

9 A. Yes, our institution tests every
10 single colorectal cancer patient for MSI-high.

11 Q. Okay. And if a colorectal cancer
12 patient -- if their MSI-high test comes back
13 positive, what happens?

14 ATTORNEY RATLIFF: I object to the form
15 of the question.

16 A. Can you clarify what you mean by
17 "what happens"?

18 Q. Uh-huh.

19 Do you use the results of that
20 MSI-high testing that you perform on
21 colorectal cancer patients in making treatment
22 decisions for the patient?

23 A. So one of the reasons that we test
24 for MSI-high and have done this for many, many
25 years is that MSI-high could be a marker for
 genetic syndrome that predisposes someone and

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 potentially their family to develop colon
4 cancer and other cancers.

5 So one aspect of MSI-high testing
6 is referral to a genetics counselor to
7 understand whether that's a fundamental or
8 germline mutation, and that is something that
9 we certainly do.

10 That may have significant impacts
11 on that person's screening for other cancers,
12 as well as the treatment of their cancer, and
13 potentially family who may have the same genes
14 as they have.

15 Q. And when you're talking about
16 germline mutations, you're talking about Lynch
17 syndrome; correct?

18 A. Correct. The name for a germline
19 mutation in an MMR protein is Lynch syndrome.

20 Q. Okay. If you have a colorectal
21 cancer patient who is MSI-high, would that
22 affect your decision whether or not to
23 prescribe that patient Keytruda?

24 ATTORNEY RATLIFF: I object to the form
25 of the question.

26 A. So, again, it's quite complicated

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 and it depends on the stage of the cancer of
4 the patient and the other potential treatment
5 options for that person.

6 Q. Uh-huh.

7 A. Perhaps you can specify.

8 Q. So how does MSI-high -- strike
9 that.

10 How is the stage of the colorectal
11 cancer patient influence the use of MSI-high
12 in making treatment decisions with a patient?

13 A. So colon cancer very broadly is
14 staged as either being metastatic, meaning
15 incurable for -- by surgery or curable by
16 surgery -- potentially curable by surgery,
17 which is called Stage 1 to 3 colon cancer, and
18 that's the vast majority of colon cancers.

19 Currently, if a patient has Stage 1
20 to 3 colon cancer, there is no role for
21 immunotherapy in treatment, as the treatment
22 is surgery, sometimes followed by
23 chemotherapy. We are doing clinical trials to
24 advance that, but that's the current standard
25 of care.

 The role of immunotherapy is

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 currently only relevant in the metastatic
4 patients.

5 Q. And what is the definition of
6 metastatic?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So generally metastatic is used to
10 describe one of two things, either a cancer
11 that, as I said, is not curable by removing
12 it, so it can't be removed through surgery or
13 some other means, and thus, it's,
14 quote/unquote, incurable by surgery, or a
15 cancer that has spread from its original site
16 of origin.

17 Q. How does metastatic cancer that is
18 incurable by surgery differ from cancer that's
19 unreceptible?

20 A. So if you're using the terminology
21 in that sentence, metastatic cancer that's
22 incurable by surgery means that the metastatic
23 cancer has spread from where it started and
24 there is evidence that cancer cells have gone
25 somewhere else from the site of origin.

26 Q. Can you have metastatic cancer that

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 has not spread from where it started?

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So as I said earlier, it depends on
6 what context one is using the terminology
7 "metastatic." If you use it in the context of
8 metastatic cancer that is not surgically
9 removable, it would imply two separate things.
10 It has spread and it's not surgically
11 removable.

12 If one just calls the cancer
13 incurable or metastatic, it may refer to a
14 cancer that is in its local spot, but has
15 spread to such an extent to the local tissue
16 that is incurable and unremovable by surgery.

17 Q. So how does that metastatic cancer
18 that has spread to such an extent in the local
19 tissue that's incurable differ from locally
20 advanced cancer?

21 A. So --

22 ATTORNEY RATLIFF: I object to the form
23 of the question, as well as to the premise of
24 the question.

25 A. Yeah, so there are not really

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 standard definitions for many of these
4 materials, so, for example, locally advanced
5 cancer is really not an accepted terminology
6 that can transfer from one physician to
7 another physician, meaning one surgeon may
8 look at something and say, This can never come
9 out. It's locally advanced, and another
10 surgeon can look at it and say, I have no
11 problem doing surgery here.

12 So there isn't anything biological
13 that we can use to define locally advanced,
14 and generally, we leave it up to the person
15 who is evaluating the patient.

16 Q. So in your opinion, there is no
17 standard definition of locally advanced
18 cancer?

19 A. I can't speak for all cancers, but
20 for GI cancers, that is generally accurate.
21 There is no standard definition.

22 Q. In your practice, do you prescribe
23 Keytruda to colorectal cancer patients who are
24 MSI-high?

25 A. Sometimes I do, yes.

 Q. And in your practice, do you

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 prescribe Keytruda to colorectal cancer
4 patients who are not MSI-high?

5 A. So I generally do not, outside of a
6 clinical trial or some very rare exceptions.

7 Q. As part of your practice, do you
8 regularly read the medical literature?

9 A. So the medical literature is a very
10 broad term. Certainly spent a considerable
11 amount of time reading medical literature. I
12 hardly make a dent in what's out there by
13 doing that.

14 Q. So what is your process for
15 identifying the most relevant medical
16 literature to review?

17 ATTORNEY RATLIFF: I object to the form
18 of the question.

19 A. So I have a few processes. One is
20 I get a daily listing from some cultivated
21 service that tells me what they think is
22 important in the literature, and I do my own
23 independent reading, and I receive journals in
24 my home that I look at, usually online
25 actually nowadays, but I also work within a
 group and we have regular meetings, and it's

3 sort of an opportunity for people who have
4 found something that they think is relevant,
5 to share it with the group and discuss what it
6 might mean. So we attend things called
7 journal club and other educational meetings,
8 as well as larger meetings with key opinion
9 leaders and Congress meetings.

10 Q. You mentioned that you look at
11 journals online. Which journals do you read
12 online?

13 A. So I would say it's an evolving
14 cast. I currently look at Nature, Journal of
15 Clinical Oncology. Often the New England
16 Journal of Medicine and a journal called
17 Science. In addition, I receive other
18 journals, and I, again, look at many things,
19 depending on whether the headline that is
20 relevant to me and catches my interest.

21 Q. And why did you pick those journals
22 to review?

23 A. The primary reason is that if one
24 serves as a reviewer for a journal, they
25 usually get a complementary subscription to
26 that journal, and then they just start sending

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 that to you.

4 Sometimes they stop after a year
5 and sometimes they never stop. So these are
6 all journals that at some point, I probably
7 engaged with them, and they started sending
8 things to me, and they're of interest.

9 Q. And would you say that those
10 journals are highly respected journals?

11 A. In general, yes. I don't agree
12 with everything I read, but yes.

13 Q. So you don't agree with everything
14 you read even in highly respected journals?

15 A. Correct.

16 Q. Okay. Are you aware of any
17 research in the field of oncology that was
18 later retracted or corrected?

19 ATTORNEY RATLIFF: I object to the form
20 of the question.

21 A. What do you mean by "the field of
22 oncology"?

23 Q. So you review journals as part of
24 your medical practice; correct?

25 A. (No response.)

26 Q. And I'm assuming that those are

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 journal articles that are relevant to your
4 oncology practice; correct?

5 A. That is correct.

6 Q. Okay. So of those journal articles
7 that you review that are relevant to your
8 oncology practice, do you remember any that
9 have been either corrected or retracted?

10 ATTORNEY RATLIFF: I object to the form
11 of the question.

12 A. So it's very common to have
13 corrections, which are usually editorial
14 corrections, of the name or the spelling in a
15 journal. It's exceedingly rare for a journal
16 printed in a high impact publication to be
17 retracted.

18 And I could think of very few
19 examples of that, and say it's much more
20 likely that a journal describing very
21 preliminary scientific work, that is almost
22 speculative, would be retracted, but in the
23 publications that I mentioned, I think it's
24 exceedingly rare for an article to be
25 retracted, and I can't recall a specific
example in GI cancer that comes to mind.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Okay. And sometimes when journal
4 articles are published, the journal will also
5 publish letters or comments on those articles;
6 correct?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So that is correct, but it's highly
10 variable based on the journal as to what
11 format those take and how much review or peer
12 review those undergo.

13 Q. And sometimes those letters or
14 comments can come from authors who disagree
15 with the journal article; correct?

16 A. So again, it depends on the
17 journal. Some journals will not publish such
18 an article or letter and some will.

19 Q. Which journals will publish those
20 type of letters or comments?

21 A. So I don't think journals release
22 their official editorial stance, and I think a
23 lot of it depends on the editorial decision
24 making of the editors of that journal.

25 Q. Uh-huh.

 A. The New England Journal of Medicine

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 does occasionally publish critical letters.

4 They almost never critique the primary finding
5 of the study and they almost always discuss
6 the implication of that study and what the
7 author said versus what the arguer or
8 discusser thinks.

9 Q. So there can be a disagreement in
10 sort of the medical community about what the
11 implications of a given reference are;
12 correct?

13 ATTORNEY RATLIFF: I object to the form
14 of the question.

15 A. Again, that's incredibly broad
16 statement. It depends on the article and what
17 it's arguing and whether there is room for a
18 different interpretation of those facts or a
19 disagreement with the facts.

20 Q. But that happens sometimes; right?

21 ATTORNEY RATLIFF: I object to the form
22 of the question.

23 A. I would say in clinical trials, in
24 clinical trial research, it's exceedingly rare
25 that someone would challenge the fundamental
26 facts of an article.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. What about medical literature
4 that's not related to clinical trials, is it
5 more common to see those challenges to the
6 interpretation of a nonclinical trial medical
7 reference?

8 ATTORNEY RATLIFF: I object to the form
9 of the question.

10 A. Yeah, I can't speak very
11 definitively to that. Again, it would
12 probably depend on how clearly defined the
13 outcomes of the study are.

14 Q. Uh-huh.

15 A. In clinical trial research, as we
16 see in the MSI study record, it's almost
17 always the case that the authors or the people
18 who conduct the clinical trial will define
19 population involved, the endpoint they're
20 looking at, the treatment they're giving
21 before they start.

22 Q. Uh-huh.

23 A. And as long as they report that
24 accurately in the manuscript, it's difficult
25 to argue with those facts or to find challenge
26 with them.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Uh-huh.

4 A. Most reviewers, including myself,
5 will always look at a document that's
6 submitted for a clinical trial publication and
7 make sure that it matches what was reported in
8 the clinical trial record at the initiation of
9 the study, and it always does.

10 Q. And you previously testified that
11 some medical literature will contain
12 speculative statements; correct?

13 ATTORNEY RATLIFF: I object to the form
14 of the question, as well as to the premise of
15 the question.

16 A. So I can't speak for all medical
17 literature. I think specifically the journals
18 that I mentioned earlier, again, speaking that
19 there are editors of these journals who make
20 these decisions, but they almost always were
21 not encouraged or would prohibit a speculative
22 statement.

23 In a journal you'd have to support
24 what you're saying with the facts of what you
25 have in the article. There are many, many
26 other journals that are published that may

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 have different standards.

3 Q. And as a reader of a given article
4 or reference, would you approach a speculative
5 statement more critically than you would sort
6 of a factual statement about the results of a
7 trial or something like that?

8 ATTORNEY RATLIFF: I object to the form
9 of the question.

10 A. So I think those statements would
11 be stated very differently, right. If someone
12 said a definitive conclusion, that would be
13 taken in a different light than if they said a
14 speculative statement.

15 Q. Uh-huh.

16 A. I think both would be taken
17 seriously if you take seriously the author of
18 the study.

19 Q. Uh-huh.

20 A. But they have different
21 implications.

22 Q. And what are those different
23 implications?

24 A. One is speculation and one is
25 definitive.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Uh-huh.

4 And as a reader of an article,
5 would you be more critical or maybe have, you
6 know, read more closely that speculative
7 statement than you would that factual
8 statement?

9 ATTORNEY RATLIFF: Which article, which
10 speculative statement are you talking about?

11 Q. So --

12 A. Yes, can you clarify -- sorry, I'll
13 repeat that.

14 Q. Okay.

15 A. But this is getting very abstract
16 and vague. I mean, I think in general, a
17 person would read an article and have the same
18 level of belief in that article based on the
19 authors and the journal regardless of what the
20 statement is, but again, if you have a
21 specific example, I perhaps can comment on it.

22 ATTORNEY RATLIFF: Counsel, we've been
23 going about an hour. While you're searching
24 for a question, let's take a break.

25 ATTORNEY BROWN-MARSHALL: We'll take a
break.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 THE WITNESS: A break.

4 CERTIFIED STENOGRAPHER: Off the
5 stenographic record at 10:16 a.m.

6 - - -

7 (Whereupon, a short recess was
8 taken.)

9 - - -

10 CERTIFIED STENOGRAPHER: Back on the
11 stenographic record at 10:29 a.m.

12 BY ATTORNEY BROWN-MARSHALL:

13 Q. Dr. Oberstein, as part of your
14 medical practice, do you monitor postings on
15 ClinicalTrials.gov

16 A. So what do you mean by "monitor"?

17 Q. Do you read postings on
18 ClinicalTrials.gov

19 A. So, yes, I frequently do.

20 Q. Okay. And are those postings, are
21 those related to clinical trials that you are
22 participating in?

23 A. So I review a very large number of
24 postings to be honest, I engage in many
25 clinical trials, but, you know, one of the
26 primary uses of ClinicalTrials.gov to me and

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

2 already being tested and what context and
3 learn information from that as well. It's
4 very often one of the primary public sources
5 of information about ongoing clinical trials
6 for a particular drug.

7 Q. And do you limit your review of
8 postings to ClinicalTrials.gov to specific
9 diseases?

10 ATTORNEY RATLIFF: I object to the form
11 of the question.

12 A. So I'm not sure what you mean by
13 that. I treat specific diseases and do
14 research on specific diseases, and that's what
15 I'm primarily interested in. However, there
16 are many, many medications that are being
17 tested in a different setting that would have
18 relevance to the disease that I treat or the
19 setting in which I want to use it in.

20 Q. And when you read a submission on
21 ClinicalTrials.gov related to a clinical
22 trial, do you read that submission with the
23 assumption that that trial will be successful?

24 A. So that's an incredibly vague
25 question and it really depends on the trial,

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 what I know about it, you know, the
4 information, the setting, the sponsor, you
5 know, I incorporate all of the information
6 there to make that decision.

7 Q. So you read those submissions with
8 an eye towards sort of evaluating how
9 successful you think the trial might be based
10 on those factors that you just described?

11 A. So I don't think that was an
12 exhaustive list of factors, meaning, I think
13 it's hard to give a single answer for every
14 single posting on ClinicalTrials.gov about the
15 desire to participate in that trial and what
16 we mean by the likelihood of success or
17 ability for a certain patient to go on that
18 trial.

19 Q. But you sort of review a clinical
20 trial that you might be considering for a
21 patient with a critical eye in that you need
22 to evaluate what you think is the sort of the
23 value of that trial?

24 ATTORNEY RATLIFF: I object to the form
25 of the question, as well as to the premise of
26 the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I'm not sure what you mean by "a
4 critical eye." I think we certainly want to
5 be good stewards and give the right treatment
6 to the right person.

7 Q. And part of that being a good
8 steward is evaluating what you think the
9 potential success of a clinical trial would be
10 before you enroll a patient in that trial?

11 A. So I would certainly want to make
12 sure that it's worthwhile for a patient to go
13 on a trial before recommending the trial to
14 that patient.

15 Q. And you noted in your declaration
16 that: My focus on multidisciplinary
17 collaboration has led to rapid access
18 referrals of patients in our clinics and
19 increased clinical trial participation by over
20 100 percent; is that correct?

21 A. That is correct.

22 Q. Okay. Why is it important to
23 increase clinical trial participation by over
24 100 percent?

25 A. I'm trying to find it. So there
are many reasons likely for trials are

3 valuable. One of the reasons, as I just
4 mentioned, is that for many patients, clinical
5 trials are part of what we consider the
6 standard of care, and thus ideally, every
7 patient with colon cancer who has treated with
8 two prior regimens, excuse me, would have a
9 clinical trial that they can participate in,
10 if appropriate.

11 So the reality is that clinical
12 trials open and close and are for different
13 cohorts and they're very specific, so by
14 increasing both awareness of clinical trials,
15 increasing the range of clinical trials, we're
16 able to give more options to patients.

17 Q. And are clinical trials the method
18 by which new methods of treatment are
19 identified?

20 ATTORNEY RATLIFF: I object to the form
21 of the question.

22 A. So I'm sorry, what do you mean by
23 "methods of treatment"?

24 Q. So one of the purposes of a
25 clinical trial could be to evaluate a new use
26 for a known drug; correct?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. That is correct.

6 Q. And -- so increasing participation
7 in clinical trials would help support the
8 evaluation of new uses for known drugs;
9 correct?

10 ATTORNEY RATLIFF: I object to the form
11 of the question.

12 A. So not necessarily. There are many
13 clinical trials that don't lead to new uses of
14 drugs, but potentially.

15 Q. What are the other potential
16 benefits of expanded participation in clinical
17 trials?

18 A. So, again, the primary benefit for
19 a patient is to have access to more options
20 for therapy to treat their cancer, help them
21 have a better outcome.

22 Q. So going beyond an individual
23 patient, are there benefits to sort of
24 patients writ large to increasing
25 participation in clinical trials?

26 ATTORNEY RATLIFF: I object to the form

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

of the question.

3 A. So I'm not sure what you mean by
4 "patients writ large." Not the person who's
5 on the trial? Somebody else?

6 Q. Are there benefits to, let's say,
7 colorectal cancer patients as a collective to
8 increasing participation in clinical trials?

9 ATTORNEY RATLIFF: I object to the form
10 of the question.

11 A. So I wouldn't say clinical trials
12 per se. It really depends on the quality of
13 the clinical trials.

14	Q. Uh-huh.
----	------------

15 A. You know, if they're clinical
16 trials that are of quality that they're likely
17 to give new understanding of how to treat a
18 patient, then certainly that could have
19 relevance for, as you put it, the community at
20 large, the community at writ large I guess,
21 but that's why we evaluate clinical trials and
22 we decide, you know, whether this is an
23 appropriate -- or not appropriate, whether
24 this is a clinical trial that is likely to
25 benefit our patients and it is something that

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
fits within our sphere of treatment.

3 Q. And, Dr. Oberstein, you have a
4 master's in biostatistics from Columbia;
5 correct?

6	A. That's correct.
---	--------------------

7 | Q. Why did you obtain that degree?

8 | A. Why did I obtain?

9	Q.	Uh-huh.
---	----	---------

10 A. So that degree was done in a
11 federally funded grant program, meaning I
12 submitted a grant, an application was awarded,
13 and they paid for my degree, to support me as
14 what was called a patient oriented research
15 fellowship. And the goal I think of that
16 underlying federal grant is to increase the
17 number of physicians and researchers who are
18 applying the techniques of research for
19 patient-specific cares.

20 My aspect of that was clinical
21 trial design and clinical trial conduct, and
22 so one of the really important parts of
23 clinical trials is the statistics part of it,
24 to make sure that we are asking questions that
25 we can answer in the context of a clinical

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 trial, and that at the end of a successful
4 trial, will have an answer to that question.

5 Q. And that statistical training,
6 that's not something that you learn as part of
7 your medical training; correct?

8 A. So it's absolutely essential to
9 have some basic statistical knowledge as part
10 of medical training and more specifically in
11 oncology, which is a very trial heavy field.
12 We do a lot of clinical trials. As you see,
13 that's one of the standard of cares for a
14 patient. This was well above that. So I did
15 more advanced techniques in statistics in
16 dedicated courses in biostatistics.

17 Q. And how have you used that sort of
18 advanced statistical knowledge in your medical
19 practice?

20 A. So I use it frequently when I both
21 evaluate clinical trials, when I talk to our
22 biostatisticians about designing prospective
23 studies, but primarily in educating our
24 fellows and our junior faculty about how they
25 could use statistics to look at the
26 literature, look at the data that's printed

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 and understand what exactly it's telling us
4 and how to utilize it in their practice.

5 Q. And as part of your practice, you
6 are involved in designing and conducting
7 clinical trials; correct?

8 A. That is correct.

9 Q. And those clinical trials that you
10 have designed and conducted involve using
11 novel agents, including immunotherapies, for
12 the treatment of colorectal, pancreatic, and
13 other GI cancer patients; correct?

14 A. That is correct.

15 Q. How many clinical trials have you
16 designed?

17 A. So it's a little bit difficult to
18 give an exact answer to that question, because
19 as I think I mentioned a few times, clinical
20 trials really require a very large team of
21 participants for many, many different aspects
22 of the trial, and so there are some that I was
23 the principal investigator and the primary,
24 quote/unquote, designer.

25 Q. Uh-huh.

 A. But there are many, many, many

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

studies in which I have a role as one of the consultants or one of the key opinion leaders in helping provide direction and design for that trial. So including the more broad definition, I would say probably 30 or 40 clinical trials, but it's hard to give an exact number.

9 Of the trials that I've primarily
10 designed and conducted on my own, it's
11 probably in the 5 to 10 number.

12 Q. And were you the principal
13 investigator on those 5 to 10 trials?

14 A. Generally.

15 Q. And what does it mean to be a
16 principal investigator on a clinical trial?

17 A. So, again, a principal investigator
18 can mean many different things and these
19 terminologies are all quite varied depending
20 on the context, so perhaps you can give me
21 some more perhaps to what you mean.

22 Q. Well, you used the term "principal
23 investigator." I'm just trying to figure out
24 what you mean by it when you use it?

25 ATTORNEY RATLIFF: If that's a

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 question, I object to the form of the
4 question.

5 A. So let me do perhaps the most
6 common use is that each site, each institution
7 or site, has to have one person who is
8 responsible for overseeing all aspects of the
9 trial and is accountable, and that person is
10 called the principal investigator.

11 Q. Uh-huh.

12 A. In general, that person may or may
13 not have been the one who designed the trial,
14 but at that site for which they serve as
15 principal investigator, they ultimately have
16 responsibility of all of the people involved
17 in the regulatory, the clinical conduct, the
18 reporting, and other aspects of the clinical
19 trial, and need to be familiar with that.

20 Q. Do clinical trials usually have a
21 sort of primary principal investigator?

22 A. So I would say there is really no
23 usual with clinical trials. Some do and some
24 don't. There is really as many flavors as you
25 can imagine.

26 Q. When you make a submission to

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 ClinicalTrials.gov, do you need to identify

3 the principal investigator on your submission?

4 ATTORNEY RATLIFF: I object to the form
5 of the question.

6 A. So in general, in
7 ClinicalTrials.gov, you identify -- I think
8 the term is a study official, which is usually
9 someone in which the, I guess, the HHS or NIH
10 can contact that person for information.
11 That's not always the principal investigator,
12 though sometimes it is.

13 So just, for example, by mistake
14 someone recently posted a clinical trial that
15 included my cell phone number as the principal
16 contact. My phone was ringing off the hook
17 until we corrected that. So that could
18 happen. I was not the principal investigator
19 and that was inappropriate, but very often
20 they will include a contact, but not always.

21 So it always has to include a
22 contact for the FDA to reach out to, but not
23 always the principal investigator.

24 Q. So of those 5 to 10 clinical trials
25 that you were responsible for designing, how

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 many of those were -- involved

4 immunotherapies?

5 A. The majority of them.

6 Q. And which immunotherapies did those
7 involve?

8 A. So as I recall, this is not a
9 comprehensive list, some included
10 pembrolizumab in combination with
11 chemotherapy. I recently did a clinical trial
12 with a drug called camrelizumab. One with a
13 drug called spartalizumab. And I'm the
14 principal investigator of another trial with
15 an immunotherapy whose name I can't recall or
16 pronounce right now.

17 Q. So the clinical trial with
18 camrelizumab, what sort of immunotherapy is
19 that?

20 A. So I misspoke. Camrelizumab is an
21 immunotherapy. I was not the principal
22 investigator of that trial. The one I meant
23 was canakinumab.

24 Q. And what type of immunotherapy is
25 canakinumab?

 A. That is an antibody, again,

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 something called IL-1 beta.

3 Q. So not a checkpoint inhibitor?

4 A. Not a checkpoint inhibitor.

5 Q. Okay.

6 A. I -- I -- I don't know if you want
7 background. IL-I beta involves something
8 called MDSCs, or myeloid derived suppressor
9 cells.

10 Q. And you also mentioned a clinical
11 trial involving spartalizumab?

12 A. Correct.

13 Q. What type of immunotherapy is that?

14 A. Spartalizumab is a PD-1 enteron.

15 Q. And do you know who makes that
16 antibody?

17 A. Novartis provided the drug to me
18 for the study, but I think they've given up on
19 or passed it on to someone else.

20 Q. So clinical trials are classified
21 by phases; correct?

22 A. Correct.

23 Q. Okay. And there is a Phase I, a
24 Phase II, and a Phase III?

25 A. And a lot of gray area in between.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Okay. What is a Phase I trial?

4 A. So, again, these descriptions are
5 not 100 percent clear-cut, and there is very
6 little that limits a person from describing
7 their trial within one context, even if it
8 crosses a gray area, but traditional Phase I
9 clinical trials were meant to discover whether
10 an agent or a drug is safe and to find a
11 maximum tolerated dose that that drug can be
12 given to to people in a certain circumstance.

13 Q. And what's a Phase II trial?

14 A. So, again, traditionally a Phase II
15 trial was done after a Phase I, when a dose
16 was identified, to try to determine whether
17 there is any evidence of that dose would have
18 a beneficial effect on people or whoever was
19 being tested in that Phase II trial.

20 Q. And what is a Phase III trial?

21 A. So, again, in the most simple
22 terms, a Phase III trial is done if a Phase II
23 trial shows that there is some effect of the
24 medication, to try to determine whether the
25 medication is better than a standard
26 alternative medication, utilizing a much

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 higher level of statistical significance and
4 standards than in a Phase II.

5 Q. And are Phase III trials generally
6 larger than Phase II trials?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So, again, it's very hard to give
10 generality for clinical trials, because it
11 would depend on the target and the specific
12 indication and statistical method being used.
13 In many circumstances, Phase III trials are
14 larger, but it's not necessarily the case.

15 Q. And I've seen some labels for sort
16 of intermediate levels. Are you familiar with
17 a Phase IIB trial?

18 A. So, again, these terminology are
19 not defined and people sort of make them up
20 for their own trial. There is an intent.
21 Very often, and not always, a Phase IIB trial
22 would be a Phase II trial where you're trying
23 to determine efficacy, but you do it in a
24 randomized fashion to include some kind of a
25 control group, even though statistically it's
 not as powerful or as large or as definitive

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

as a Phase III trial, but you can get some preliminary data. That is one use of Phase IIB trials. It's not the only use of them.

6 Q. What are some other uses of
7 Phase IIB trials?

8 A. So, again, anyone can call their
9 trial a Phase IIB trial, there is no
10 limitation, but someone might do that if it's
11 sort of a second step they did a Phase II
12 trial, gathered information, but want to
13 gather even more information.

14 Q. And clinical trials can be
15 prospective or retrospective; correct?

16 A. So in general, yes.

17 Q. Okay. And what is a prospective
18 clinical trial?

19 A. So, again, in the simplest terms, a
20 prospective clinical trial is where the
21 patients are identified and being placed on a
22 trial before they are treated, before the
23 question that you're addressing the trial is
24 asked.

25 Q. And what is a retrospective trial?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So one form of retrospective trials
4 is where you look at people who have already
5 been treated and try to analyze the outcomes
6 that they had compared to some other standard.

7 Q. And is it possible for a clinical
8 trial to be both prospective and
9 retrospective?

10 A. So this is where the terminology is
11 sort of difficult. In general, no, however,
12 there could be aspects of a trial that were
13 done prospectively and aspects that were done
14 retrospectively.

15 Q. And how would that work?

16 ATTORNEY RATLIFF: I object to the form
17 of the question.

18 A. So I'll give an example from a
19 nontherapeutic clinical trial where this is
20 much more common.

21 Q. Uh-huh.

22 A. A group might decide that we want
23 to understand why people under the age of 50
24 have an increased incidence of colon cancer,
25 and so we enroll 5,000 college students and
26 watch them prospectively to see if they

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
develop colon cancer.

3 20 years later, we take all of that
4 data and we retrospectively go back and look
5 for factors that may contribute to that thing
6 happening. So that's a prospectively
7 collected, retrospectively analyzed trial,
8 that would be considered a very weak trial in
9 our fields.

10 Q. And a clinical trial can be
11 randomized or nonrandomized; correct?

12 A. Again, those are both possibilities
13 in a clinical trial, yes.

14 Q. Okay. What is a randomized
15 clinical trial?

16 A. So there are many ways to
17 randomize, but often a clinical trial that's
18 randomized is a trial in which a patient is
19 enrolled in the trial without anyone or
20 without them knowing what they're going to
21 receive in the trial, and at some point after
22 enrollment, the randomization occurs and
23 they're placed into an arm in that trial.

24 Q. And does that involve randomly
25 assigning the treatment method that they're

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 going to receive as part of the clinical
3 trial?

4 A. I don't understand the question.

5 Q. So if patients are randomized to
6 different arms, they can be randomized to
7 different methods of treatment, correct, if
8 those arms have different methods of
9 treatment?

10 A. Or no treatment.

11 Q. Or no treatment.

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 Q. Are there ways that patients can be
15 randomized that don't implicate the method of
16 treatment in a clinical trial?

17 ATTORNEY RATLIFF: I object to the form
18 of the question.

19 A. I don't think I understand the
20 question.

21 Q. So the example we were talking
22 about is patients being randomized to
23 different arms of a clinical trial where those
24 different arms received different methods of
25 treatment or no treatment; correct?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So potentially.

6 Q. Are there other ways other than
7 assigning methods of treatment that patients
8 can be randomized within a clinical trial?

9 A. Again, I think this is very, very
10 vague.

11 Q. Uh-huh.

12 A. I'm not sure I understand what
13 you're referring to.

14 Q. Well, what are all the ways that
15 patients can be randomized within a clinical
16 trial?

17 A. So there is no limit to how
18 patients can be randomized. You can randomize
19 patients to whether they go and get the same
20 treatment in one site or another site or
21 whether they have this nurse or that nurse or
22 many, many other things. So the type of
23 treatment is not necessarily what you're
24 randomizing. There could be many other
25 variables, infinite number of variables that
could be the randomization variables.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Could a clinical trial be both
4 randomized and nonrandomized?

5 A. So I think generally a trial that's
6 randomized is described as being randomized.
7 Like I said, there are many variables in a
8 trial. And you certainly can randomize some
9 variables and not others, but that's not
10 usually how we would describe it.

11 Q. So when a study is referred to as
12 nonrandomized, how would a person of ordinary
13 skill interpret that?

14 ATTORNEY RATLIFF: Which study are you
15 talking about?

16 A. I --

17 ATTORNEY RATLIFF: Hold on.

18 I object to the form of the question.

19 A. So can you be specific perhaps
20 about the study or what you're referring to?

21 Q. Well, you said that a study can be
22 labeled randomized or nonrandomized; correct?

23 A. (No response.)

24 Q. How would someone reading a
25 submission on a ClinicalTrials.gov understand
that label of randomized or nonrandomized?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So I think a person of ordinary
6 skill in the art would have to look at the
7 information that's in front of them, and I
8 don't think I can answer without seeing the
9 specific information that that person would
10 then utilize to determine whether it's
11 randomized or not randomized.

12 Q. Would that randomization or
13 nonrandomization, would that be limited to
14 assignment to arms in the clinical trial?

15 ATTORNEY RATLIFF: I object to the form
16 of the question.

17 A. I think you already asked that, but
18 again, it really depends on what's written in
19 the document and what the person of ordinary
20 skill would see in front of them to make that
21 determination.

22 Q. What clues would be written in the
23 document that would tell them how randomized
24 or nonrandomized should be interpreted?

25 A. I think we're talking about a
theoretical document. If you show me a

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 document, I can point to you to what I think
4 would be valid in that document.

5 Q. Well, you mentioned that there
6 could be tons of variables that are randomized
7 within a clinical trial; right?

8 A. Correct.

9 Q. How would a person reading a
10 ClinicalTrials.gov submission related to a
11 trial figure out which variables are
12 randomized and which ones are not?

13 ATTORNEY RATLIFF: I object to the form
14 of the question.

15 A. So a person of ordinary skill would
16 look at the document in front of them, and
17 again, if you give me a specific example, I
18 can look at it and give you my judgment as a
19 person of ordinary skill how they would
20 evaluate that document, but theoretically, I
21 can't answer the question without seeing what
22 you're referring to.

23 Q. Do ClinicalTrials.gov submissions
24 generally contain information on all the
25 possible variables in a given clinical trial?

26 A. Each submission stands on its own.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 There is no one rule for all submissions or
4 one general thing that you'd expect. I'd have
5 to evaluate the submission from the framework
6 of a person of ordinary skill to make a
7 determination.

8 Q. And how would you do that?

9 A. I would review the submission from
10 the framework of a person of ordinary skill at
11 the time of the relevant question.

12 Q. And what would you be looking for
13 in that review?

14 ATTORNEY RATLIFF: I object to the form
15 of the question.

16 A. I'd be looking at the content of
17 the document.

18 Q. What sorts of information would you
19 be looking for in the contents of the
20 document?

21 ATTORNEY RATLIFF: I object to the form
22 of the question.

23 A. I mean, I would look at everything
24 written in that document. It's hard to answer
25 theoretically without information in front of
26 me that you're asking about.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. So in order to have a randomized
4 trial, is it necessary to have at least two
5 different treatment options?

6 A. Again, it's difficult to answer
7 without understanding a specific trial that
8 you're referring to. As I mentioned earlier,
9 it's conceivable that a trial can randomize
10 patients for something that's not a treatment
11 option. That would be declared clearly or
12 something that would be understood by the
13 person of ordinary skill.

14 Q. If all arms of a clinical trial
15 receive the same treatment, is it possible to
16 have a randomized trial?

17 ATTORNEY RATLIFF: I object to the form
18 of the question.

19 A. So it depends on more specifics of
20 the trial. I think it's hard to answer that
21 question in the abstract. If there are
22 specific examples, I'm happy to review them.

23 Q. But you're not ruling out that it's
24 possible to have a randomized trial if all
25 arms of a clinical trial receive the same
treatment?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. I didn't rule it out. It depends
4 on what's written in the document and what
5 else is being considered in the clinical
6 trial.

7 Q. What is the starting point for
8 designing a clinical trial?

9 ATTORNEY RATLIFF: I object to the form
10 of the question.

11 A. Can you clarify the question,
12 please?

13 Q. Well, you designed multiple
14 clinical trials; right?

15 A. Correct.

16 Q. What is the impetus for you to
17 start designing the clinical trial?

18 ATTORNEY RATLIFF: I object to the form
19 of the question.

20 A. So each one has its own, sorry,
21 impetus and rationale.

22 Q. Uh-huh.

23 A. I think in some circumstances we --
24 I have identified a medication that we think
25 would be beneficial to patients in a certain
26 setting and want to test it on those patients

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 to see if that confirms the hypothesis.

4 Q. So you said that each clinical
5 trial has its own rationale; correct?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. I mean, there may be two trials
9 with the same rationale, but each one needs to
10 be judged independently.

11 Q. Okay. But each clinical trial will
12 have its own rationale; correct?

13 ATTORNEY RATLIFF: I object to the form
14 of the question.

15 A. You mean there will be a reason why
16 the people are doing the clinical trial?

17 Q. Essentially, yes.

18 A. So, yeah, people generally have a
19 reason to do the clinical trials.

20 Q. Okay. And that rationale is
21 generally related to some sort of hypothesis
22 that they're testing with the clinical trial;
23 correct?

24 ATTORNEY RATLIFF: I object to the form
25 of the question.

26 A. So, again, clinical trials range

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 from an incredibly broad spectrum of what
4 people are testing and why they're testing it,
5 but every single clinical trial I think is
6 designed to learn some new information that
7 will help us in our knowledge base overall.

8 Q. And that's based on some sort of
9 rationale for why you would do a clinical
10 trial; correct?

11 ATTORNEY RATLIFF: I object to the form
12 of the question.

13 A. So generally, yes.

14 Q. And what are common bases for the
15 rationale for a clinical trial?

16 ATTORNEY RATLIFF: I object to the form
17 of the question.

18 A. Do you mean a specific clinical
19 trial?

20 Q. No, clinical trials in general.

21 A. I think it's very hard to answer.
22 I'm sorry. There are thousands and thousands
23 of clinical trials. I mean, I could -- do you
24 want to make this concrete, the specific MSI
25 study record that we have here, which
 describes the Phase II clinical trial of

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 pembrolizumab in patients with microsatellite
4 unstable tumors, I think this trial
5 specifically was to test whether the response
6 rate and question of the survival would be
7 improved in patients with MSI-high colorectal
8 cancer treated with pembrolizumab.

9 Q. That was not my question.

10 At a general level, can in vitro
11 data serve as a possible rationale for a
12 clinical trial?

13 ATTORNEY RATLIFF: I think that was the
14 response to your question, and also note that
15 the court reporter moved over a second monitor
16 for questioning counselor to see. We are
17 having trouble with the realtime. It stopped
18 over here.

19 ATTORNEY BROWN-MARSHALL: My realtime
20 stopped too.

21 CERTIFIED STENOGRAPHER: Do you want to
22 go off the record?

23 ATTORNEY RATLIFF: Yes, please.

24 ATTORNEY BROWN-MARSHALL: Yes, sir,
25 please.

26 CERTIFIED STENOGRAPHER: Off the

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 stenographic record at 11:05 a.m.

3 - - -

4 (Whereupon, a short recess was
5 taken.)

6 - - -

7 CERTIFIED STENOGRAPHER: Back on the
8 stenographic record at 11:15 a.m.

9 BY ATTORNEY BROWN-MARSHALL:

10 Q. So, Doctor, before we get back to
11 my question that is pending when your counsel
12 unilaterally decided to take a break, I need
13 to ask you: Have you had any conversations
14 with counsel during any of the breaks we've
15 taken today regarding the substance of your
16 testimony?

17 A. No, I've not.

18 Q. So getting back to my question, can
19 in vitro data serve as a possible rationale
20 for starting a clinical trial?

21 ATTORNEY RATLIFF: I object to the form
22 of the question.

23 A. So, again, it's an incredibly broad
24 question, but I -- maybe you can clarify what
25 you mean by in vitro data as opposed to what?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. In vitro data as opposed to in vivo
4 data?

5 ATTORNEY RATLIFF: Same objections.

6 A. So I can't speak for every clinical
7 trial, and I think it's possible that someone
8 could submit a rationale to start a trial with
9 in vitro data alone.

10 Q. Okay. And can in vivo animal data
11 serve as the basis for the rationale of a
12 clinical trial?

13 A. Again, it depends on what clinical
14 trial and what stage clinical trial, but there
15 certainly are early stage trials that might be
16 done based on in vivo animal data.

17 Q. And how does the stage of a
18 clinical trial affect the types of data that
19 might serve as the rationale?

20 ATTORNEY RATLIFF: I object to the form
21 of the question, as well as to the premise of
22 the question.

23 A. So as I described earlier, a
24 Phase II clinical trial generally is done
25 after a Phase I clinical trial and thus
26 wouldn't be done without a Phase I clinical

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 trial ahead of it to show a safe and maximum
4 tolerable or effective recommended Phase II
5 dose of a trial.

6 Q. And the Phase I, Phase II,
7 Phase III trials, then those are generally
8 sequential?

9 ATTORNEY RATLIFF: I object to the form
10 of the question.

11 A. So sometimes.

12 Q. Sometimes?

13 A. (Indicating.)

14 Q. When are they not sequential?

15 A. Again, there are no hard rules
16 about a trial, and there are times where a
17 study might do a Phase I and then a Phase III
18 or skip certain steps along the way. It all
19 depends on the context and the findings and
20 the individual details of the trial.

21 Q. What would be the motivation for
22 skipping from a Phase I trial directly to a
23 Phase III trial?

24 ATTORNEY RATLIFF: I object to the form
25 of the question, as well as to the premise of
the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. I can't recall right now any
4 specific examples where that was done. I know
5 it has been done, but I think in each
6 circumstance, you have to evaluate why the
7 investigators chose to make that decision.

8 Q. Have you ever seen a clinical trial
9 that did not have some sort of rationale
10 identified?

11 A. You mean identified where?

12 Q. So in the description of the
13 clinical trial?

14 ATTORNEY RATLIFF: I object to the form
15 of the question.

16 A. Yeah, I -- I really can't speak to
17 every single clinical trial that I've ever
18 seen, so I can't recall yes or no.

19 Q. So when conducting a clinical
20 trial, sometimes the rationale is correct and
21 sometimes it's not; right?

22 ATTORNEY RATLIFF: I object to the form
23 of the question.

24 A. So what do you mean by rationale
25 being correct or not correct?

26 Q. So if the clinical trial is testing

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 a hypothesis based on the rationale, sometimes
4 that hypothesis is correct and sometimes it's
5 not; right?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. I wouldn't use the word "correct"
9 or "incorrect." I mean, sometimes the
10 hypothesis is confirmed or not confirmed.

11 Q. Uh-huh.

12 A. That doesn't change the rationale.

13 Q. Uh-huh.

14 But sometimes clinical trials are
15 successful in confirming the hypothesis and
16 sometimes they're not successful in confirming
17 the hypothesis; correct?

18 ATTORNEY RATLIFF: I object to the form
19 of the question.

20 A. So that is correct in very broad
21 terms. Again, depends on what the hypothesis
22 is when you use the words "correct" or "not
23 correct" or "confirming" or "not confirming."

24 Q. Do you expect every clinical trial
25 to be successful in confirming the hypothesis
 that it's testing?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So it depends on the trial. I
4 would expect to evaluate a clinical trial
5 based on the prior art known before that trial
6 time point when I'm making that assessment and
7 what's available to a person of ordinary skill
8 to determine this likelihood or possibility of
9 success in that clinical trial. It would vary
10 greatly depending on the specifics of the
11 trial and other information in the art and
12 literature.

13 Q. What is the general success rate
14 for clinical trials?

15 ATTORNEY RATLIFF: I object to the form
16 of the question.

17 A. So I don't think one can answer
18 that question, because clinical trials are not
19 one category of things. It really depends on
20 the type of clinical trial, the information
21 that was known prior to the trial, whether it
22 was the first use of a drug or a subsequent
23 use of the drug or a phase of the trial.

24 So I think a specific trial we can
25 potentially give some information, but it
always depends on the details of the trial.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And are you aware of any available
4 statistics that had looked at the success rate
5 of clinical trials?

6 A. So I don't think that it's
7 appropriate to look at clinical trials in
8 general as one category, and I don't think
9 statistics speak for all clinical trials.
10 There are potentially statistics for smaller
11 subsets of that.

12 Q. So looking at the clinical trials
13 in which you've participated, did you expect
14 all of those clinical trials to be successful?

15 A. So I can't answer for all of the
16 clinical trials as a group. I think I can
17 speak about specific clinical trials.

18 Q. Uh-huh.

19 A. And what information I had going
20 into the trial, what the prior art taught us,
21 and what I would have expected at that time.

22 Q. Okay. Have you ever participated
23 in a clinical trial where you anticipated that
24 it would fail?

25 A. Not that I can recall, but I can't
 specifically recall every single clinical

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 trial I've participated in.

3 ATTORNEY BROWN-MARSHALL: I'd like to
4 mark this as Exhibit 2405.

5 - - -

6 (Whereupon, document entitled
7 Gastrointestinal Cancer - Gastroesophageal,
8 Pancreatic, and Hepatobilia 4042, is received
9 and marked as Exhibit 2405 for
10 Identification.)

11 - - -

12 CERTIFIED STENOGRAPHER: Number 2405.

13 BY ATTORNEY BROWN-MARSHALL:

14 Q. Dr. Oberstein, the court reporter
15 has just handed you Exhibit 2405.

16 Are you familiar with this
17 document?

18 ATTORNEY RATLIFF: And I will object to
19 Exhibit 2405 for the purposes of
20 authentication, foundation, and hearsay.

21 A. Yes, I'm familiar with this
22 abstract.

23 Q. Okay. And what is this abstract?

24 A. So this is an abstract describing a
25 Phase II clinical trial of Lenvatinib plus

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 pembrolizumab for patients with immunotherapy
4 naive advanced gastric cancer following
5 first-line therapy.

6 Q. And you are one of the authors on
7 this abstract; correct?

8 A. That is correct.

9 Q. Okay. And did you participate in
10 the clinical trial described in this abstract?

11 A. Yes, I did.

12 Q. Okay. What was your role in that
13 clinical trial?

14 A. I enroll patients in the clinical
15 trial, and ultimately when the first
16 investigator named here left our institution,
17 I took over her role as the principal
18 investigator for the conclusion of the trial.

19 Q. Okay. And did this specific
20 clinical trial have a rationale?

21 A. Yes.

22 Q. Okay. And what was the rationale
23 for this clinical trial?

24 A. So the rationale of this clinical
25 trial was that treating with -- cancer with a
26 drug that focuses on blood vessels or

3 angiogenesis would make tumors more
4 susceptible to immunotherapy and thus the
5 combination of an antiangiogenic treatment
6 plus immunotherapy treatment would be
7 efficacious.

8 Q. And that rationale was based on
9 preclinical studies; correct?

10 A. It was based on preclinical
11 studies, as well as clinical studies, as this
12 combination is used in other cancers with
13 efficacy.

14 Q. And this clinical trial, you were
15 testing a hypothesis that the combination of
16 VEGF inhibition and ICI may be more beneficial
17 than either agent alone; correct?

18 ATTORNEY RATLIFF: I object to the form
19 of the question.

20 A. So that was the hypothesis in this
21 clinical trial, correct.

22 Q. Okay. And when you say ICI, you're
23 referring to immune checkpoint inhibitors;
24 correct?

25 A. Yes.

 Q. And the immune checkpoint inhibitor

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. That is correct.

4 Q. Why were you testing in ICI-naive
5 patients?

6 A. Because at the time we started this
7 study, there was no FDA approval or wide use
8 of immune checkpoint inhibition in first-line
9 treatment of gastric cancer.

10 Q. So why would that motivate you to
11 test in ICI-naive patients?

12 A. Because we suspected that should we
13 move forward with this combination, that's who
14 would get it. We wanted to have a relevant
15 patient population.

16 Q. So for this specific study, when
17 you started this study, did you anticipate
18 that it would be successful?

19 A. So as I clarified, I was not
20 involved in starting this study. I came into
21 the study in the middle of the course of the
22 study.

23 Q. Uh-huh.

24 A. But -- so I can't answer for the
25 person who started the study.

26 Q. So at the point that you joined the

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 study, did you anticipate the study would be
3 successful?

4 A. I did.

5 Q. You can put that aside.

6 ATTORNEY BROWN-MARSHALL: So I'm
7 handing the court reporter an exhibit that I
8 would like to mark as 2406.

9 - - -

10 (Whereupon, document headed HHS
11 Public Access, is received and marked as
12 Exhibit 2406 for Identification.)

13 - - -

14 CERTIFIED STENOGRAPHER: Number 2406.
15 BY ATTORNEY BROWN-MARSHALL:

16 Q. Dr. Oberstein, are you familiar
17 with this exhibit?

18 ATTORNEY RATLIFF: I will object to
19 Exhibit 2406 for the purposes of
20 authentication, foundation, and hearsay.

21 A. Yes, I'm familiar with this
22 publication.

23 Q. Okay. And are you an author on
24 this publication?

25 A. Yes, I am.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. What is this publication?

4 A. So this publication describes the
5 results from a Phase IIB randomized
6 multicenter study of something called GVAX
7 pancreas vaccine and CRS207, compared with
8 chemotherapy in adults previously treated with
9 metastatic pancreatic adenocarcinoma.

10 Q. And the first author of this
11 publication is Dung Le; correct?

12 A. That is correct.

13 Q. And did you work with Dr. Le during
14 the course of this clinical trial?

15 A. Yes.

16 Q. Have you worked with Dr. Le before?

17 A. So just to clarify, when you say
18 "worked with," we participated on group calls
19 together to discuss the progress of the trial.

20 Q. Uh-huh.

21 A. I participated on calls with Dr. Le
22 before this, yes.

23 Q. Okay. And what was your role in
24 this trial?

25 A. So I as I recall was a principal
investigator of this trial at my site, which

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 was at Columbia at the time.

4 Q. Okay. And were you involved in the
5 design of this clinical trial?

6 A. I don't recall my exact role in the
7 design of the trial. I don't recall. So I
8 may have been, but I can't recall.

9 Q. Okay. Was Dr. Le involved in the
10 design of this clinical trial?

11 A. I can't speak for Dr. Le.

12 Q. Okay. And this trial tested GVAX
13 pancreas and CRS207, compared with
14 chemotherapy in adults with previously treated
15 metastatic pancreatic adenocarcinoma; correct?

16 A. That is correct.

17 Q. What is GVAX pancreas?

18 A. So GVAX pancreas is a type of a
19 vaccine that is injected into patients and
20 meant to stimulate an immunoresponse against
21 their tumor.

22 It specifically stimulates
23 something called granulocyte macrophage colony
24 stimulating factor secreting --

25 - - -

 (Clarification requested by the

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 stenographer.)

4 A. CSF for colony stimulating factor
5 secreting tumor cells from pancreatic cancer
6 cell lines to induce an immunoresponse in the
7 patient.

8 Q. So you would consider GVAX pancreas
9 as a type of immunotherapy?

10 A. I would say it's a type of vaccine,
11 so it depends on how you qualify
12 immunotherapy. It's not a checkpoint therapy,
13 but it's certainly something that is meant to
14 stimulate the immune system.

15 Q. Well, would you categorize GVAX
16 pancreas vaccine as an immunotherapy?

17 A. Again, I think generally we think
18 of it as a vaccine therapy, which is possibly
19 a subset, but not usually classified as
20 immunotherapy.

21 Q. So you don't consider vaccines to
22 be a subset of immunotherapies?

23 ATTORNEY RATLIFF: I object to the form
24 of the question.

25 A. I don't think there is a standard
definition. I think very often when people

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

that there was some connection between those
two things.

4 Q. And that was based on the results
5 of those two patients?

6 A. That's my recollection.

7	Q. Okay.
---	----------

8 A. I was not involved with treating
9 those patients and those studies were not done
10 with my supervision.

11 Q. And this article talks about
12 CRS207, what is that?

13 A. So CRS207 is basically a live
14 bacteria. So you inject bacteria into
15 patients. It's attenuated so that it doesn't
16 cause severe illness, but it causes them to
17 get pretty sick because it is live bacteria,
18 and the hope and expectation is that that will
19 cause their immune system to target the
20 bacteria and also target the cancer.

21 Q. So is CRS207 then given in
22 conjunction with the GVAX pancreas vaccine in
23 this clinical trial?

24 A. So there were three arms in this
25 clinical trial. Arm 1 got a combination of

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 the GVAX pancreas vaccine in CRS207; Arm 2 got
4 CRS207 alone without the vaccine; and Arm 3
5 received chemotherapy.

6 Q. And what were the results of this
7 clinical trial?

8 A. So the results of the clinical
9 trial were that the overall survival in the
10 true group that got GVAX plus CRX207 was not
11 different than those who got chemotherapy. So
12 it was not improved as had been hypothesized.

13 Q. So the study failed to meet its
14 primary efficacy endpoint; correct?

15 A. That is correct.

16 Q. And when you joined the study, did
17 you anticipate that the study would be
18 successful?

19 A. Yes, I did.

20 Q. And that was based on the data
21 related to the treatment of the two
22 patients --

23 A. There was additional data as well.
24 So prior to this Phase IIB study, they
25 conducted a 2A study where they gave similar
26 treatments to look at different doses that

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

might be effective.

3	Q. Okay.
---	----------

4 A. I was not part of the study, but I
5 knew the data from it.

6 Q. So the rationale was based on those
7 two patients that were treated at Johns
8 Hopkins and had a successful response and
9 results of that Phase IIA study; correct?

10 ATTORNEY RATLIFF: I object to the form
11 of the question, as well as to the premise of
12 the question.

13	A. So I believe so.
----	---------------------

14 Q. Okay. And in spite of that
15 promising data, the study still failed to meet
16 its primary endpoint?

17 A. So I would say despite that
18 preliminary data.

19 Q. It still failed to meet its primary
20 endpoint?

21 A. This study did fail to meet its
22 primary endpoint, correct.

23 Q. You can put that aside.

24 So as part of your work designing
25 and conducting clinical trials, do you have

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 any experience with the ClinicalTrials.gov
4 website?

5 A. What do you mean by "experience"?

6 Q. Have you ever made submissions to
7 ClinicalTrials.gov in conjunction with a
8 clinical trial that you either designed or
9 conducted?

10 A. Yeah, yes, but I didn't personally
11 make the submissions. We have a regulatory
12 coordinator who does the submissions. I have
13 to approve them if they're done for my trial.

14 Q. Okay. Are you involved in drafting
15 those submissions to ClinicalTrials.gov

16 A. I certainly approve them before
17 they're posted.

18 Q. But you have a team that assists
19 you in drafting and actually posting them?

20 A. We definitely have a team that's
21 part of our regulatory control to make sure we
22 do everything we have to do before starting
23 the study.

24 Q. Are submissions to
25 ClinicalTrials.gov required for human clinical
26 trials?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. In the U.S.?

4 Q. In the U.S., yes.

5 A. I believe so, yes.

6 Q. Okay. And FDA does not pay
7 investigators for making submissions to
8 ClinicalTrials.gov; correct?

9 ATTORNEY RATLIFF: I object to the form
10 of the question.

11 A. I'm really not familiar with FDA
12 payments.

13 Q. Okay. You've never received a
14 payment from the FDA for making a submission
15 to ClinicalTrials.gov

16 A. I don't think I've ever received
17 any payment from the FDA. I don't -- I don't
18 know if -- there might be a charge to post. I
19 really don't know.

20 Q. Do you agree that submissions to
21 ClinicalTrials.gov provide important
22 information to the public?

23 A. I do agree with that.

24 Q. And as a result, those submissions
25 must include certain basic information about
26 the clinical trial; correct?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I think the submission -- the
4 data that's required in ClinicalTrials.gov is
5 determined by the FDA.

6 Q. Uh-huh.

7 A. Not by the public.

8 Q. Uh-huh.

9 But I'm not asking about who
10 determines what needs to be included. Let me
11 rephrase this.

12 In order for the public to have
13 access to the information in
14 ClinicalTrials.gov -- strike that.

15 In order for the public to have
16 access to important information about clinical
17 trials, the submissions to ClinicalTrials.gov
18 need to contain that sort of basic important
19 information; correct?

20 ATTORNEY RATLIFF: I object to the form
21 of the question.

22 A. So I think that the investigator
23 and their team determine what to include in
24 their submission to ClinicalTrials.gov.
25 Again, it's not determined based on the
public. It's based on their motivation.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 There are requirements in certain necessary
4 fields, but there is certainly leeway for the
5 investigator to add information or include
6 information based on what they want to do.

7 Q. So how does the public use the
8 information that's posted on
9 ClinicalTrials.gov

10 ATTORNEY RATLIFF: Every single person
11 in the world you're asking about?

12 A. Sorry, so can you clarify what you
13 mean by that?

14 Q. Well, you agreed that submissions
15 to ClinicalTrials.gov provide important
16 information to the public; correct?

17 A. Yes, I agree with that.

18 Q. Okay. So how is that information
19 used by the public?

20 ATTORNEY RATLIFF: I object to the form
21 of the question.

22 A. So that's overly broad I would say
23 because the public can encompass many, many
24 people who are using it for many different
25 purposes.

26 Q. Uh-huh.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. One purpose of people using
4 ClinicalTrials.gov would be to understand
5 whether there is a trial that they can
6 participate in that would fit their tumor type
7 that's currently enrolled in.

8 Q. Uh-huh.

9 A. There are many other potential ways
10 that the public would use this information.

11 Q. Would you say that gaining
12 information about potential clinical trials is
13 the primary purpose for giving the public
14 access to ClinicalTrials.gov information?

15 A. I don't know that there is a
16 primary purpose. It would depend on the
17 person submitting the submission to
18 ClinicalTrials.gov and what they wanted to
19 include in that submission --

20 Q. Uh-huh.

21 A. -- to help or not help the public
22 or anybody else who is looking at the
23 submission.

24 Q. Does NYU, where you're employed,
25 does it have any requirements around
26 submissions to ClinicalTrials.gov for the

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 purposes of the clinical trials that you work
4 on?

5 A. You mean in addition to the federal
6 requirements or separate from that?

7 Q. Do they have any requirements at
8 all in conjunction with submissions to
9 ClinicalTrials.gov

10 A. So I believe that we have a
11 requirement that a trial be submitted on
12 ClinicalTrials.gov before it can be opened and
13 enrolling patients.

14 Q. So if a clinical trial involves a
15 new drug or a new use for a known drug, you'll
16 need to submit an IND; correct?

17 ATTORNEY RATLIFF: I object to the form
18 of the question.

19 A. So I don't recall the exact
20 requirements for when to submit an IND. I do
21 recall the FDA has a very extensive website of
22 the checklist that one fills out to determine
23 whether their new study needs an IND. It's
24 not as simple as I think you just put it.

25 Q. Okay. Let's back up.
 What is an IND?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So the words IND stands for
4 Investigational New Drug Application.

5 Q. Okay. And those INDs are submitted
6 to FDA; correct?

7 A. Correct.

8 Q. Okay. Who submits the IND to FDA?

9 ATTORNEY RATLIFF: I object to the form
10 of the question.

11 A. So the IND holder, if that
12 answers -- I'm not sure I understand the
13 question either.

14 Q. So on a clinical trial, who is the
15 person on the team who generally submits the
16 IND to FDA?

17 ATTORNEY RATLIFF: I object to the form
18 of the question, as well as to the premise of
19 the question.

20 A. So I think it varies very much
21 depending on what kind of trial, who is
22 involved in the trial, you know, there could
23 be many different workflow in IND within a
24 clinical trial. Someone has to take that
25 responsibility and is responsible for
26 submitting the required documents to the FDA

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

to get approval prior to the trial being able
to proceed.

4 I'm sorry, let me correct that.
5 Not so much the trial. Prior to the
6 investigation being able to proceed.

7 Q. Is the IND holder generally a
8 physician who's participating in the clinical
9 trial?

10 A. It varies greatly depending on the
11 nature of the trial. Not necessarily.

12 Q. Who else might be the IND holder
13 for a clinical trial?

14 A. So other parties of the trial, such
15 as the sponsor of the trial or pharmaceutical
16 company or a clinical research organization
17 that's organizing the trial can all be IND
18 holders as far as I understand.

19 Q. And IND submissions made to FDA are
20 confidential submissions; correct?

21 A. I'm not sure.

22 Q. Okay. Are you aware of any ways in
23 which FDA makes IND submissions publicly
24 available?

25 A. I'm not aware of any such ways.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Are you the IND holder for any
4 clinical studies?

5 A. Yes.

6 Q. Okay. Which ones?

7 A. Do you have my CV? Maybe that
8 would help. Well, just for one example, that
9 study you presented earlier, this study
10 (indicating).

11 Q. Uh-huh.

12 A. I'm IND holder for this study.

13 Q. And you are holding up

14 Exhibit 2405; correct?

15 A. 2405, correct.

16 Q. So you weren't the IND holder --

17 A. I didn't submit the IND because as
18 I said, I took over the study. Someone left
19 the institution. I stepped into that role.
20 So by stepping into that role, I became the
21 IND holder, and it's my responsibility to
22 submit reports to the FDA about progress and
23 data about the study.

24 Q. Okay. Have you ever prepared an
25 IND for submission to the FDA?

26 A. Yes, I have.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And have you reviewed INDs for
4 studies you participated in, but you were not
5 the IND holder?

6 A. I don't recall that, but it's
7 possible.

8 Q. Is it customary for a physician
9 who's participating in a clinical trial, who
10 is not the IND holder, to review those IND
11 submissions?

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 A. I think it depends on the trial and
15 the specific circumstances of that.

16 Q. And FDA must approve IND
17 submissions before a clinical trial can start;
18 correct?

19 A. So essentially the FDA has to give
20 the okay to move ahead with the trial after
21 the IND submission.

22 Q. And IRB approvals are also required
23 before a clinical trial can start; correct?

24 A. So in almost every single
25 institution in the United States, IRB approval
is required.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. An IND holder for a new use for a
4 known drug may not necessarily be the IND
5 holder for the underlying drug; correct?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. So, again, an IND is not for a
9 drug. It's for an investigation.

10 Q. Uh-huh.
11 So if an investigation is looking
12 at a new use for a known drug, there is a
13 separate IND for that investigation and a
14 separate IND for the underlying drug; correct?

15 A. So --

16 ATTORNEY RATLIFF: I -- I object to the
17 form of the question.

18 A. So potentially, as I said earlier,
19 there are certainly circumstances where a
20 study can be IND exempt and you don't need to
21 get an IND if one was already obtained for the
22 same drug in some circumstances.

23 Q. And what are the situations in
24 which an investigation would be IND exempt?

25 A. So, as I said, I can't recall them
 off the top of my head. I know that the FDA

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 has a long list. It's essentially a checklist
4 that we go through to determine if your study
5 is IND exempt or requires an IND.

6 Q. So in the INDs that you have
7 reviewed, have you ever seen statements
8 informing FDA that the IND holder did not
9 think the study was going to work?

10 A. So I have submitted IND statements
11 to the FDA and I have never submitted that. I
12 can't speak for other people's IND
13 submissions.

14 Q. Clinical trials may involve the
15 evaluation of a biomarker; correct?

16 A. In general, that is correct.
17 Again, very vague, but correct.

18 Q. Okay. And what is a biomarker?

19 A. So a biomarker, again, is quite a
20 vague term, but it's something that is
21 biologically or related to a tumor or a person
22 that gives some information about how they
23 will do or how they will respond to a therapy.

24 Q. And there are different types of
25 biomarkers; correct?

26 ATTORNEY RATLIFF: I object to the form

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

of the question.

3 | A. What do you mean by the question?

4 Q. So biomarkers can serve different
5 purposes; correct?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. I'm not sure what you're referring
9 to. I'm sorry.

10 Q. So are you familiar with the term
11 "predictive biomarker"?

12 | A. I'm familiar with the term, yes.

13 Q. Okay. What is a predictive
14 biomarker?

15 A. So a predictive biomarker, again,
16 like all these terminology, can mean different
17 things in different settings, and so it would
18 be helpful to see the exact context you're
19 using it in.

20 In general, or sometimes people use
21 it to be a prediction about whether a
22 treatment or an intervention will help a
23 person.

24 Q. And have you been involved in any
25 clinical trials that evaluate a predictive

3 biomarker?

4 A. So I've been involved in many, many
5 trials. I can't recall specifically.

6 Q. But sitting here today, you can't
7 remember any clinical trial that you've been
8 involved in that involved the evaluation of a
9 predictive biomarker?

10 A. I think sitting here today, I don't
11 have recollection right now.

12 Q. How many predictive biomarkers have
13 been identified in conjunction with oncology
14 therapies?

15 A. Again, that's a very broad
16 question, and I think pretty much beyond the
17 scope of what I was asked to evaluate here. I
18 think there are many, but I can't give you a
19 specific number. Oncology is a very broad
20 field encompassing many tumors, many trials,
21 many possible biomarkers, and I think there
22 are many of them, but I can't recall every
23 single one.

24 Q. And some predictive biomarkers will
25 work in one type of cancer, but not in another
26 type of cancer; correct?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. Can you refer to a specific
6 biomarker to ask that question?

7 Q. No, I'm just asking in general.

8 ATTORNEY RATLIFF: Then I object to the
9 in general asking a question.

10 A. So it's hard to answer without a
11 specific example as to what exactly you mean
12 by that.

13 Q. In your practice with your GI
14 oncology patients, do you have them evaluated
15 for a certain set of biomarkers?

16 A. Again, it's a very broad question.
17 You mean all GI cancer patients in all
18 settings?

19 Q. Let's start with colorectal cancer
20 patients. Do you have your colorectal cancer
21 patients evaluated for a certain set of
22 biomarkers?

23 A. So depends on the stage of the
24 colon cancer and many other features with the
25 patient. Sometimes I do.

26 Q. Okay. And when you do that, what

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 sort of testing do you perform on those
4 colorectal cancer patients?

5 A. I'm sorry, can you clarify what you
6 mean by that?

7 Q. So one way to test patients for
8 biomarkers is to have their tumor more
9 sequenced; correct?

10 A. That's correct.

11 Q. Okay. And when their tumor is
12 sequenced, they're looking for the presence of
13 certain biomarkers; correct?

14 ATTORNEY RATLIFF: I object to the form
15 of the question.

16 A. There are many reasons to sequence
17 a tumor. One of them may be to identify
18 biomarkers, but there are many other reasons
19 you may do it.

20 Q. What sort of biomarker-related
21 testing do you order for your colorectal
22 cancer patients?

23 A. So, again, some of it depends on
24 the particular stage of the patient and their
25 treatment options and whether this information
26 is going to change what we do for the patient.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Some of the biomarkers that we look at are
4 based on immunohistochemistry.

5 Some are based on PCR testing or
6 next generation sequencing testing are the
7 primary ways. We also utilize blood testing
8 for many of those biomarkers, not tumor
9 testing.

10 Q. And roughly, how many biomarkers do
11 you have tested for your colorectal cancer
12 patients?

13 A. Again, it's really hard to answer a
14 general question. It depends on the person
15 and the stage and the sample that's available
16 for us. It can range from a very small
17 number, to a very large number based on those
18 factors.

19 Q. Okay. Ballpark, what is the very
20 large number that you might be looking at?

21 A. So when we do next generation
22 sequencing, our panel generally looks at 500
23 genes. Those are really the spectrum of all
24 the genes that anyone who's ever had interest
25 in.

 The ones that might be relevant for

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 our patients are probably limited to 30 to 50,
4 but it depends on the circumstance, and, of
5 course, there are things that we discover as
6 time goes on.

7 Q. Are you familiar with a term
8 "treatment selection marker"?

9 A. Not particularly. It sounds like
10 something, but I don't think I've heard it
11 before.

12 Q. So if a treating oncologist is
13 interested in the results of a clinical trial,
14 how would they learn those results?

15 ATTORNEY RATLIFF: I object to the form
16 of the question.

17 A. So some of it would depend on who's
18 running the clinical trial and how they found
19 out that the trial even happened.

20 Q. Uh-huh.

21 A. One could reach out to the contact
22 person for a trial and ask for information.
23 Very often clinical trial results are posted
24 online or presented in conferences.

25 Of course, it happens that
26 something is presented and nobody knows about

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 it or you didn't personally know about that,
4 so you might have to do a literature search
5 and look for the results of that trial.

6 Q. When you say that the results might
7 be posted online, is that a posting on
8 ClinicalTrials.gov

9 A. That's one way to post things
10 online. There is other ways to publish
11 things.

12 Q. Okay. What other means of
13 publishing clinical trial results online are
14 available?

15 ATTORNEY RATLIFF: I object to the form
16 of the question.

17 A. So trials can be presented to
18 conferences and those abstracts are posted
19 publicly or submitted for manuscript
20 publication, which would get it posted, and to
21 be very honest, nothing stops a person running
22 a trial, who is running a trial, from just
23 putting on Twitter the results of their trial.

24 Q. Uh-huh.

25 A. Every day if he wants.

 Q. And if a -- so if a researcher

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 that you rely on in formulating your opinions
3 is something that you refer to as the MSI-high
4 study record; correct?

5 A. That is correct.

6 Q. So that is a June 10, 2013
7 submission of a version of a study record to
8 ClinicalTrials.gov; correct?

9 ATTORNEY RATLIFF: Are you representing
10 that to him?

11 ATTORNEY BROWN-MARSHALL: I'm asking
12 him.

13 ATTORNEY RATLIFF: I object to the form
14 of the question.

15 A. So the MSI-high study record that I
16 referred to throughout my declaration is the
17 one that I have that's posted on June 10,
18 2013, is ClinicalTrials.gov.

19 BY ATTORNEY BROWN-MARSHALL:

20 Q. Okay. And you can see from
21 Exhibit 1005 that there are multiple
22 submissions underneath that study record;
23 correct?

24 A. That is correct.

25 Q. Okay. So I'm asking when a

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

researcher posts the results of a clinical
trial to ClinicalTrials.gov, are those
included as a submission in the study record
for that clinical trial?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. So I suspect that they are.

9	Q.	Uh-huh.
---	----	---------

10 A. When one goes online to
11 ClinicalTrials.gov, there are tabs, which is
12 what I thought you were referring to, and
13 there is a separate tab now for study results.

14	Q.	Okay.
----	----	-------

15 A. I don't think it existed in 2015.

16	Q.	Okay.
----	----	-------

17 A. But I would have to confirm that.

18 Q. Okay. But now you think that you
19 can go to ClinicalTrials.gov and click on a
20 results tab and it will show you the results
21 of the clinical trial?

22 A. If the investigators have posted
23 the results.

24 Q. Okay. At what point would a
25 treating oncologist rely on the results of a

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 clinical trial in making a treatment decision
4 for one of their patients?

5 ATTORNEY RATLIFF: I object to the form
6 of the question.

7 A. So that strongly depends on the
8 nature of the clinical trial, the results of
9 the trial, and what was known in the prior art
10 to that treating oncologist at the time that
11 they're making that decision.

12 Q. Would they wait until results of
13 the clinical trial are available to make a
14 decision to treat one of their patients based
15 on that method?

16 ATTORNEY RATLIFF: I object to the form
17 of the question.

18 A. As I stated, it depends on what was
19 available to that oncologist in the prior art
20 and what other information they have to make a
21 determination.

22 Q. So that would be based on the
23 publicly available information that that
24 treating oncologist could access?

25 ATTORNEY RATLIFF: I object to the form
26 of the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. Is that something different than
4 the prior art?

5 Q. Well, you used the term "prior
6 art," and is it your understanding that prior
7 art is publicly available?

8 A. Yes, it is.

9 Q. Okay. So if you're using the term
10 "prior art," does that necessarily mean that
11 the information that the treating oncologist
12 is relying on is publicly available?

13 ATTORNEY RATLIFF: And by "treating
14 oncologist," are you referring to every
15 oncologist in the world?

16 ATTORNEY BROWN-MARSHALL: I'm referring
17 to a treating oncologist.

18 ATTORNEY RATLIFF: Oh. I object to the
19 form of the question.

20 A. So depending on the context and
21 this person of ordinary skill who might be
22 your treating oncologist, they would evaluate
23 the information that's available to them in
24 the prior art to make a decision as to whether
25 or not to utilize the treatment.

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
BY ATTORNEY BROWN-MARSHALL:

3 Q. When a researcher is conducting a
4 clinical trial, does statistical significance
5 play a role in assessing the results of that
6 trial?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So, again, it's a very broad
10 question and will depend on the specific
11 trial --

12	Q.	Uh-huh.
----	----	---------

13 A. -- what the results are; what
14 statistics were planned for the trial; and
15 what else is known in the prior art, probably
16 among other things.

17	Q.	Uh-huh.
----	----	---------

18 A. But I think it's really hard to
19 describe a general principle that will be true
20 about all clinical trials, and we need to talk
21 about a specific trial to answer that.

22 Q. How do you determine if a clinical
23 trial has met its primary endpoint?

24 ATTORNEY RATLIFF: I object to the form
25 of the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. When you say "you," who are you
4 referring to?

5 Q. A researcher designing the clinical
6 trial?

7 ATTORNEY RATLIFF: The same objection.

8 A. So for the most part, clinical
9 trials should have objectives that are clearly
10 stated and well-defined, and it's either yes
11 or no whether you meet those objectives.

12 There are certainly times where
13 there are multiple objectives in a trial and
14 you meet one and not the other and then you
15 have to evaluate what the significance of that
16 is, and there are certain times where a person
17 of ordinary skill reading the trial, even if
18 it did not or did meet its -- reached their
19 primary objective, will determine to utilize
20 that information or not utilize that
21 information in how they behave and treat
22 patients.

23 Q. When designing a clinical trial, is
24 the power of the trial something that a
25 researcher would take under consideration?

 ATTORNEY RATLIFF: I object to the form

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 your declaration, back to Paragraph 10, so in
4 the first sentence you say: My research
5 activities that have focused on designing and
6 conducting clinical trials is a novel agents,
7 including immunotherapies for the treatment of
8 colorectal and pancreatic and other GI cancer
9 patients.

10 What do you mean by
11 "immunotherapies"?

12 A. So that in that sentence, I mean a
13 very broad term of any therapy that modifies
14 the immune system in order to affect cancer
15 outcomes.

16 Q. Okay.

17 A. And so it can incorporate
18 checkpoint therapies, other checkpoints
19 besides the PD-1, PD-L1 that are well-known.

20 We also, as I said earlier, are
21 doing studies that are called myeloid
22 checkpoints essentially or myeloid immune
23 suppressive cells. I am doing some studies
24 with vaccines, and I'm looking at other
25 components of the immune system.

 Just to add one last detail: I'm

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 actually doing a trial now where we're having
4 patients exercise to see if that enhances
5 their immune system.

6 Q. Interesting.

7 A. So in theory, that counts as
8 immunotherapy.

9 Q. So immunotherapy is a category that
10 encompasses checkpoint inhibitors, monoclonal
11 antibodies, vaccines, and even exercise?

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 A. So, again, like I said before, it
15 really depends on the context and how someone
16 is using it.

17 Q. Uh-huh.

18 A. And there are certainly very
19 specific understandings within the literature
20 where someone meets it one way or the other, I
21 think a person of ordinary skill would have to
22 evaluate each reference in its context.

23 Q. Okay. You mentioned immune
24 checkpoint inhibitors. How many different
25 types of immune checkpoint inhibitors are used
26 in immunotherapy for oncology?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I don't think I'm qualified to
4 speak about all oncology. There are many,
5 many cancers that are outside of my expertise.

6 Q. Uh-huh.

7 A. Within GI cancers, we primarily use
8 two checkpoints right now, CTLA4 and PD-1.
9 There are many ways to target those
10 checkpoints, so there are multiple different
11 drugs. Those are the two that are currently
12 approved for GI cancers.

13 Q. Are --

14 A. There are other checkpoints in
15 other cancers and there are many clinical
16 trials looking at other points.

17 Q. And do you have some examples of
18 those other checkpoints inhibitors that are
19 used in other cancers?

20 A. So LAG-3 is one of the examples.

21 Q. Uh-huh.

22 Are PD-L1 checkpoint inhibitors
23 available?

24 A. Yes.

25 Q. Okay. Are there any other types of
checkpoint inhibitors that are available that

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 you're aware of?

4 A. So I'm not aware of any others that
5 are FDA approved. Again, there are many in
6 clinical trials that I can't necessarily
7 comment on or remember today.

8 Q. Okay. Is T-cell transfer
9 considered a type of immunotherapy?

10 A. So, again, this falls into the
11 categories of how you define things.

12 Q. Uh-huh.

13 A. It depends on what the context is.

14 Q. Uh-huh.

15 A. So it certainly is not a checkpoint
16 blockade and nothing to do with that
17 checkpoint part of the immune system.

18 Q. Uh-huh.

19 A. It -- certainly T-cells are part of
20 the immune system, and by giving activated
21 T-cells, which is one way of T-cell transfer,
22 you can stimulate the immune system.

23 Q. Is T-cell transfer a therapy that
24 is used in oncology?

25 A. So, again, I think it's outside of
26 the scope of my expertise. In GI cancers,

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 it's not a therapy that's used. There are
4 certainly what are called CAR-T cells and
5 something called TILs that are approved in
6 other cancers that are not GI cancers.

7 Q. I think you mentioned before that
8 monoclonal antibodies are considered a type of
9 immunotherapy; is that correct?

10 A. So it depends on what they target.
11 Monoclonal antibodies are targeted agents. If
12 they target the immune system, they can be a
13 type of immunotherapy.

14 Q. Okay. So what types of targeted
15 monoclonal antibodies are available for
16 oncology?

17 A. Overall?

18 Q. Well, let's start with GI cancers
19 and then go broader.

20 A. So there are many different types
21 of monoclonal antibodies. I'm not sure if you
22 want a list of all the targets?

23 Q. List the ones that you're aware of.

24 A. So EGFR targeted antibodies; VEGF.
25 There are new antibodies that target something
26 called Claudin CLDN18.2.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Uh-huh.

4 A. There are others.

5 Q. Is oncolytic virus therapy
6 considered a type of immunotherapy that's used
7 in oncology?

8 A. So oncolytic virus therapy, if it's
9 meant to stimulate the immune system,
10 certainly could be considered a type of
11 immunotherapy.

12 Q. And is that used in GI cancers?

13 A. It is not. Outside of clinical
14 trials.

15 Q. Okay. But you're aware of
16 oncolytic virus therapy being used in clinical
17 trials for GI cancers?

18 A. I'm aware of one trial that I
19 participated in that we utilized oncolytic
20 virus therapy in pancreatic cancer.

21 Q. Are -- immune system modulators,
22 are those considered immunotherapies for
23 oncology?

24 A. So, again, immunomodulators could
25 be a type of immunotherapy.

26 Q. And in the category of immune

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 system modulators, that can include cytokines;
4 correct?

5 A. Cytokines, yes.

6 Q. Okay. And cytokines include
7 interferons and interleukins?

8 A. Among many others, yeah.

9 Q. How many cytokines are available
10 for oncology therapy?

11 A. So none of these are approved for
12 GI cancers.

13 So I don't have a specific answer
14 for you. There are many, many cytokines that
15 are potential targets for cancer therapy.

16 Q. Okay. Is BCG also a type of immune
17 system modulator?

18 A. Yes.

19 Q. Okay. And that is Bacillus
20 Calmette-Guerin?

21 A. I don't think anyone has ever said
22 something besides BCG.

23 Q. And what is BCG?

24 A. BCG is a -- essentially a live
25 virus that is injected -- or bacteria, sorry,
 that's injected to stimulate an immune -- an

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 immune response and it's utilized in nonGI
4 cancers.

5 Q. What about immunomodulatory drugs,
6 are those a type of immunotherapy?

7 A. So anything that modulates the
8 immune system is, and again, they're not
9 utilized generally in GI cancers. And for the
10 most part, they're not used in cancers.
11 They're used in other diseases. Well out of
12 the scope of my expertise for the record.

13 Q. Yeah.
14 Would VEGF inhibitors be considered
15 an immunomodulatory drug?

16 A. So I listed them early as
17 monoclonal antibiotics, as you recall. So
18 generally, we would not consider them
19 immunomodulatory.

20 As you detailed before in
21 Exhibit 2405, that was one of the hypotheses
22 of our study, is that they might have that
23 role.

24 As you said, we really weren't able
25 to conclude that, and so we don't know for
sure.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 THE WITNESS: Break?

4 ATTORNEY RATLIFF: Sure, Doctor. Want
5 to break for lunch?

6 THE WITNESS: Good time for a break for
7 lunch I think? We've been going for an hour.

8 ATTORNEY BROWN-MARSHALL: Actually, I
9 may have one or two more questions.

10 ATTORNEY RATLIFF: It's up to you,
11 Doctor.

12 THE WITNESS: It's okay with me to do
13 one or two more.

14 BY ATTORNEY BROWN-MARSHALL:

15 Q. So, Dr. Oberstein, would you agree
16 with me that the term "immunotherapy" covers a
17 broader range of treatments than just immune
18 checkpoint inhibitors; correct?

19 ATTORNEY RATLIFF: I object to the form
20 of the question.

21 A. So as I've said several times, I
22 think the term depends on the context in which
23 it's used in a specific setting.

24 Within a sentence, within a context
25 to a person of ordinary skill, it might mean
 they currently used immunotherapies, which are

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 primarily checkpoint blockade. It could mean
4 something different, but it all depends on the
5 context in which that word is used.

6 Q. So you would look to the context
7 surrounding the word to understand what the
8 term "immunotherapy" would mean?

9 A. I would do more than that. I would
10 look to the context surrounding the word and
11 what the person reading that word knows about
12 the field of treatment and immunotherapy at
13 the time that they're reading that, which
14 could change over time.

15 Q. What was the understanding of the
16 term "immunotherapy" in 2015?

17 ATTORNEY RATLIFF: I object to the form
18 of the question, as well as to the premise of
19 the question.

20 A. So I think it would depend on the
21 context. I think as of -- if we're talking
22 about our critical date of July 10, 2015, you
23 know, a person of ordinary skill looking
24 through the MSI study record would already
25 understand that checkpoint blockade therapy
26 has been effective for a single patient with

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 metastatic colorectal cancer, who is MSI-high,
4 would know that checkpoint blockade is FDA
5 approved in other settings, such as melanoma,
6 and would know that there is a lot of interest
7 in testing that in MSI-high colon cancer, and
8 would be very motivated to conduct the study
9 described in the MSI study record and expect
10 positive results.

11 Q. Does the term "immunotherapy"
12 appear in Exhibit 1005?

13 A. I do not believe so.

14 ATTORNEY BROWN-MARSHALL: We can stop
15 here for a break.

16 ATTORNEY RATLIFF: Okay.

17 THE WITNESS: Stop for lunch.

18 CERTIFIED STENOGRAPHER: Off the
19 stenographic record at 12:17 p.m.

20 - - -

21 (Whereupon, a luncheon recess is
22 taken at 12:17 p.m.)

23 * * * * * * * *

24

25

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

investigator coming up with an idea and then
another company sponsoring it and others
participating or them running the trial
completely on their own or something well in
between those two things.

7 Q. Have any of the clinical trials
8 that you've been participated in been
9 described as an investigator initiated
10 clinical trial?

11 A. So, yes.

12 Q. Okay. And were any of these
13 investigator initiated clinical trials related
14 to pembrolizumab?

15	A. Yes.
----	---------

16 Q. And were you the principal
17 investigator on any of those investigator
18 initiated clinical trials that involved
19 pembrolizumab?

20 A. So for some of them, yes, for at
21 least a period of time.

22 Q. Okay. And did you design those
23 trials of pembrolizumab that were investigator
24 initiated clinical trials?

25 A. No, not all of them, but I have

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And did they provide funding at the
4 beginning of that investigator initiated
5 clinical trial?

6 A. They provided a commitment for
7 funding before the study opened.

8 Q. In your experience, how common are
9 investigator initiated clinical trials?

10 ATTORNEY RATLIFF: I object to the form
11 of the question.

12 A. I'm not sure what you mean by
13 "common."

14 Q. How frequently do they happen?

15 ATTORNEY RATLIFF: The same objection.

16 A. I can't report the frequency of
17 those trials.

18 Q. Uh-huh.

19 A. They're not uncommon, but I don't
20 know what percentages of trials are
21 investigator initiated.

22 Q. When it comes time for FDA approval
23 based on the clinical trial, do pharma
24 companies use the data that was acquired
25 during the investigator initiated clinical
trial?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So I'm not very familiar with the
6 pharma companies' submissions to the FDA, on
7 what data they include in that.

8 Q. If you would turn to Paragraph 11
9 of your declaration.

10 And in Paragraph 11 you write:
11 Currently, I am the site principal
12 investigator on three active clinical studies
13 involving metastatic colorectal cancer
14 patients and two active clinical studies
15 involving PD-1 inhibitors, including
16 pembrolizumab.

17 Do you see that?

18 A. Yes.

19 Q. Okay. What three active clinical
20 studies are you involved in regarding
21 metastatic colorectal cancer?

22 A. So that might be an undercount, but
23 one of the trials I'm looking at is using the
24 medication called amivantamab and it is
25 evaluating the use in -- there is actually
three different trials that we're doing with

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 amivantamab looking at its use with metastatic
3 colorectal cancer.

4 Q. And I'm sure I'm going to butcher
5 this, amivantamab?

6 A. Amivantamab.

7 Q. Amivantamab, is that a monoclonal
8 antibody?

9 A. It is a bispecific antibody
10 essentially.

11 Q. And would you consider that an
12 immunotherapy?

13 A. No.

14 Q. No? Why not?

15 A. It doesn't target the immune
16 system.

17 Q. What about the second active
18 clinical study involving metastatic colorectal
19 cancer patients?

20 A. So actually just to clarify, I'm
21 working on three clinical trials in metastatic
22 colorectal cancer with amivantamab.

23 Q. Oh, okay. So all three are on --

24 A. But there are additional trials.

25 - - -

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 (Unintelligible, simultaneous
4 testimony interrupted by the certified
5 stenographer.)

6 - - -

7 CERTIFIED STENOGRAPHER: I need one at
8 a time, please.

9 A. So I am participating in three
10 active clinical trials utilizing amivantamab
11 in metastatic colorectal cancer. In addition,
12 I'm involved in other trials looking at
13 metastatic colorectal cancer, including a
14 clinical trial for medication called a KRAS
15 inhibitor, which is RMC9805. It's a small
16 molecule inhibitor of KRAS.

17 Q. Is that all of the clinical studies
18 that you're involved in that involve
19 metastatic colorectal cancer?

20 A. No. So I'm involved in additional
21 studies that I'm either not the principal
22 investigator or might be at some stages of
23 closing.

24 Q. And do any of those additional
25 studies involve using immunotherapies to treat
metastatic colorectal cancer?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So some of them do, yes.

4 Q. Okay. And which immunotherapies
5 are those?

6 A. So one of the trials I was involved
7 with, which is still open, but not accruing
8 patients, was utilizing an agent called
9 adenosine deaminase inhibitors, or CD73
10 antibodies, which are a component of the
11 immune system, but not a checkpoint blockade.

12 Q. Any other immunotherapies for --

13 A. I'm also involved in a vaccine
14 trial.

15 - - -

16 (Unintelligible, simultaneous
17 testimony interrupted by the certified
18 stenographer.)

19 - - -

20 CERTIFIED STENOGRAPHER: I need one at
21 a time, please.

22 Q. Any other immunotherapies for
23 clinical trials for metastatic colorectal
24 cancer?

25 A. So I'm also involved in a cancer
 vaccine trial that's targeting metastatic

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

colorectal cancer. Again, it's not really an
active trial, it is completed, but we haven't
published the results yet, and we're still
monitoring patients.

6 Q. And does that vaccine trial in
7 metastatic colorectal cancer, does that
8 involve investigators from Johns Hopkins
9 University?

10 A. I don't believe so, but I can't be
11 certain about all the investigators.

12 Q. So, Dr. Oberstein, if you would
13 look at the last sentence in Paragraph 11, you
14 say: I have received more than \$4.5 million
15 in funding in various pharmaceutical companies
16 related to my research activities.

17 | Do you see that?

18 A. Yes, I do.

19 Q. And how do you use those
20 \$4.5 million in funding for research
21 activities? What does that go to?

22 A. So let me just clarify where that
23 number comes from I think.

24 I don't actually keep track of
25 every budget for every clinical trial. We

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 have an office that does that.

3 Q. Uh-huh.

4 A. And all of that money goes to
5 support our clinical trial infrastructure and
6 running the clinical trials.

7 That number that we actually --
8 that I put down, 4.5 million, comes from a
9 federal website that collects information
10 about pharmaceutical sponsorship to
11 investigators for clinical trials that goes
12 back around five years, so that number is over
13 the last five years or so, maybe six, but most
14 recent years.

15 Q. Okay.

16 A. And to answer the question, that
17 money all goes to the university or the
18 hospital and they utilize it to fund and
19 operate the trials.

20 Q. And did some of that \$4.5 million
21 in funding come from Merck?

22 A. I would suspect so over the last
23 six years, yes.

24 Q. Okay. And approximately what
25 percentage of that \$4.5 million came from

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Merck?

4 A. I can't answer that. I'm not sure.

5 ATTORNEY BROWN-MARSHALL: I'd like to
6 mark this as Exhibit 2408. Oh, 2407.

7 - - -

8 (Whereupon, document entitled Paul
9 E. Oberstein | OpenPayments, is received and
10 marked as Exhibit 2407 for Identification.)

11 - - -

12 CERTIFIED STENOGRAPHER: Number 2407.

13 BY ATTORNEY BROWN-MARSHALL:

14 Q. And, Dr. Oberstein, are you
15 familiar with this document?

16 ATTORNEY RATLIFF: And I object to
17 Exhibit 2407 for purposes of authentication,
18 foundation, and hearsay.

19 A. I've never seen this printing of it
20 before, but I'm familiar with the website
21 OpenPaymentsData.cms.gov.

22 Q. Okay. And is that the website that
23 you were mentioning about a government website
24 that keeps track of funding for research and
25 other purposes that physicians receive?

26 A. Yes.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Okay. And this is the entry from
4 OpenPaymentsData.cms.gov related to you;
5 correct?

6 A. Correct.

7 Q. Okay. If you'd turn to the second
8 page, there is a chart in the middle, and you
9 see that according to this website, you
10 received approximately \$4.5 million in
11 associated research funding; is that correct?

12 A. That is correct, and like I said
13 before, that money doesn't go to me. It goes
14 to the university that operates the clinical
15 trials.

16 Q. Okay. And then you see at the top
17 of that chart, there is an entry for general
18 payment record.

19 Do you see that?

20 A. Yes.

21 Q. Okay. What are general payments?

22 A. So generally, general payments I
23 think refer to either consulting compensation
24 or fees for travel or other compensation to
25 support an individual.

26 Q. And according to this website, you

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

received \$125,000 in general payments;

correct?

4	A. Correct.
---	-------------

5	Q. Okay.
---	----------

6 If you would turn to Page 30 -- or
7 actually, let's start at the bottom of Page 2.

8 Do you see the headline: Top
9 Companies Making Associated Research Funding?

10	Do you see that?
----	------------------

11	A. Yes.
----	---------

12 Q. Okay. And if you'd turn to the
13 next page, there is a chart that follows that
14 heading, okay? And according to this chart,
15 the top contributors to your research funding
16 is Merck; correct?

17 A. That's what it says in the chart,
18 yes.

19 Q. And according to the chart, you've
20 received approximately \$2.4 million in
21 research funding from Merck; is that correct?

22 A. So just to clarify, this is funding
23 that goes to my university from Merck, but
24 yes, it does accurately reflect that.

25 Q. And Merck is by far the largest

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 contributor to your research; correct?

3 A. So I don't think that's accurate,
4 but on this chart that's what's reported.

5 Q. Okay. So you don't think that the
6 government payment system has the correct --
7 let me finish my question, has the correct
8 monetary value for contributions to your
9 research?

10 ATTORNEY RATLIFF: I object to the form
11 of the question, as well as to the premise of
12 the question.

13 A. So I think that there is not
14 standardization about how these payments are
15 reported, and I don't -- and it's
16 self-reported by companies, not by the
17 government. So I don't think it reflects the
18 entirety of the research payments that I've
19 received or have been received for trials that
20 I was affiliated with over this time period.

21 Q. But do you question the fact that
22 you've received over \$2.25 million in funding
23 from Merck?

24 A. I do not question that.

25 Q. So when you receive research

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 funding from Merck, are those funds provided
4 under some sort of agreement?

5 A. What do you mean by that?

6 Q. Do you have an agreement with Merck
7 that governs the payment of research funding
8 that you've received from Merck?

9 A. You mean me, personally, or the
10 institution that I work for?

11 Q. Either one?

12 A. So I don't personally receive any
13 research funding from Merck. None of this
14 money goes to me and none of it is an
15 agreement that I have. The institution that I
16 work for, either Columbia, which is where a
17 lot of this came to, or NYU have research
18 agreements, clinical trial agreements with
19 pharmaceutical companies.

20 Q. Including Merck?

21 A. Including Merck.

22 Q. Do you or your university keep
23 records of payments that are received from
24 Merck in relation to clinical trial research?

25 A. I do not keep record of those
 payments. I can't speak for my university.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Aside from research funding, do you
4 have any other relationships with Merck?

5 A. What do you mean by
6 "relationships"?

7 Q. Do you serve on any advisory boards
8 for Merck?

9 A. So in the past, I served on
10 advisory board for Merck. I don't think I
11 actually am currently, but it's sometimes hard
12 to know if it's a one-time thing, whether it
13 will happen again.

14 Q. And what was that advisory board
15 related to?

16 A. So in I think 2017 to around 2020,
17 I was on a gastric cancer advisory board for
18 Merck.

19 Q. And did that involve pembrolizumab
20 or Keytruda?

21 A. I mean, it was for Merck. It
22 involved anything that Merck wanted to discuss
23 with the advisory board for gastric cancer.

24 Q. Have you been a sponsored speaker
25 on behalf of Merck?

26 A. I don't recall that, but I can't

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 recall every single speakership I've done.

3 Q. Have you received any travel funds
4 from Merck?

5 A. So certainly associated with the
6 advisory board that I was on, there would have
7 been travel funds that went along with that.

8 Q. Have you received travel funds from
9 Merck related to any other purpose?

10 A. Such as?

11 Q. Speaking at a conference?

12 A. I don't think so.

13 Q. Have you received any honoraria
14 from Merck?

15 A. Outside of the context of being on
16 an advisory board?

17 Q. Yes.

18 A. I don't think I've received
19 anything outside of our advisory board
20 agreements.

21 Q. And did you receive an honoraria as
22 part of being on the advisory board?

23 A. So generally, you're compensated
24 for being part of an advisory board, either on
25 a standing basis or on an ad hoc basis.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. If you would turn to Paragraph 16
4 in your declaration.

5 You can put this aside.

6 So Paragraph 16 you wrote: I have
7 published more than 30 peer-reviewed papers
8 and have presented more than 25 oral and
9 poster presentations regarding GI cancers,
10 including the use of checkpoint inhibitors to
11 treat GI cancers. Is that correct?

12 A. That is correct.

13 Q. How many of those 30 peer-reviewed
14 publications were first authored papers?

15 A. I don't recall that offhand. I
16 don't have that information offhand, but it's
17 included in the CV that I attached to this
18 document.

19 Q. Can you ballpark how many?

20 A. I wouldn't be comfortable doing
21 that. I'd like to see the CV.

22 Q. Have you ever published in the New
23 England Journal of Medicine?

24 A. I have not.

25 Q. Have you ever published in Science?

 A. I have not.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Have you ever published in the
4 Journal of the American Medical Association?

5 A. I don't think so.

6 Q. Have you ever published in the
7 journal Cell?

8 A. I have not.

9 Q. Have you ever published in Lancet?

10 A. I'm not sure.

11 Q. And we were looking at one of your
12 publications earlier or one of your coauthors
13 was Dr. Dung Le; correct?

14 A. That is correct.

15 Q. Okay. And what is your opinion of
16 Dr. Le's research?

17 ATTORNEY RATLIFF: I object to the form
18 of the question.

19 A. I don't think I could answer that
20 question. I'm not sure what you mean by
21 "opinion" and how you encompass all someone's
22 research.

23 Q. Are you familiar with Dr. Le's
24 reputation in the oncology community?

25 A. I don't think I could report on her
 general reputation, no.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. What is your perception of her
4 reputation?

5 A. I really feel it's well beyond the
6 scope of something. I don't generally opine
7 on other people's reputation and have not
8 given that thought.

9 Q. So you don't have an opinion on
10 Dr. Le's reputation?

11 A. Reputation for what?

12 Q. So her research reputation?

13 A. I don't have an opinion.

14 Q. Okay. And have you worked with any
15 of the other inventors on the '393 patent?
16 I'll give them to you one at a time. Dr. Luis
17 Diaz?

18 A. I do not believe so.

19 Q. Have you ever worked with Dr. Bert
20 Vogelstein?

21 A. I do not believe so.

22 Q. Okay. Have you ever worked with
23 Dr. Ken Kinzler?

24 A. I do not believe so.

25 Q. Okay. Have you ever worked with
26 Dr. Nickolas Papadopolous?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I give the same answer though,
4 it does depend on what you mean by work with.
5 We have discussed research ideas together
6 before.

7 Q. Okay. Which of those folks have
8 you discussed research --

9 A. Sorry. I specifically recall
10 Dr. Papadopolous coming to present some of his
11 research to me and my team and discussing a
12 collaboration, but we never went beyond that
13 stage.

14 Q. Have you ever worked with Dr. Drew
15 Pardoll?

16 A. I have not.

17 Q. Have you ever worked with
18 Dr. Suzanne Topalian?

19 A. I have not.

20 Q. Okay. You mentioned you have 25
21 oral and poster presentations; is that
22 correct?

23 A. I think more than that number, but
24 that, at least that number, yes.

25 Q. And were any of those oral or
26 poster presentations made at the ASCO

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 conference?

4 A. Yes.

5 Q. And were any of those presentations
6 late-breaking presentations?

7 A. I don't recall right now.

8 Q. Do you usually attend ASCO?

9 A. What do you mean by "usually"?

10 Q. How often do you attend ASCO?

11 A. Most years I attend ASCO, unless
12 there is some reason why I can't or it gets
13 canceled.

14 Q. And did you attend Dr. Le's
15 presentation at the 2015 ASCO conference?

16 A. So I don't have any specific
17 recollection of attending that presentation.

18 Q. So, Dr. Oberstein, looking back to
19 your declaration, in your declaration, you
20 don't provide any opinions on anticipation; is
21 that correct?

22 ATTORNEY RATLIFF: I object to the form
23 of the question, as well as to the premise of
24 the question.

25 A. So in my declaration, I was asked
26 to serve as an expert consultant for the '393

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 patent from the perspective of person of
4 ordinary skill as of July 10, 2015, and I did
5 that. And I think applying that perspective,
6 I found and noted that all the claims of the
7 '393 patent were taught or suggested by the
8 MSI-high study record alone and with various
9 prior art references.

9 Q. So you provide the opinion that
10 they were taught or suggested, but you don't
11 provide an opinion that they were anticipated?

12 ATTORNEY RATLIFF: I object to the form
13 of the question, as well as to the premise of
14 the question.

15 A. So I did not say that. I found
16 that all of the -- each and every claim
17 limitation in the '393 patent was taught in
18 the MSI-high study record and with various
19 prior art references.

20 Q. But you don't provide an opinion
21 that those claims were anticipated by the
22 MSI-high study record?

23 ATTORNEY RATLIFF: I object to the form
24 of the question, as well as to the premise of
25 the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I did not say that. I found
4 that each and every claim limitation of the
5 '393 patent was taught in the MSI-high study
6 record from the perspective of a person of
7 ordinary skill in the art as of July 10, 2015.

8 Q. And you don't provide any opinion
9 that the claims of the '393 patent were
10 rendered obvious; correct?

11 ATTORNEY RATLIFF: I object to the form
12 of the question, as well as to the premise of
13 the question.

14 A. So I'll restate my primary finding,
15 which is that each and every claim limitation
16 of the '393 patent was taught in the prior art
17 references, including the MSI-high study
18 record as of July 10, 2015, for a person of
19 ordinary skill in the art.

20 Q. But you don't use the word
21 "obviousness"?

22 A. I would just restate my primary
23 finding, which is that each and every claim of
24 the '393 patent was taught in the prior art,
25 including the MSI study record for a person of
26 ordinary skill as of July 10, 2015.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And what you're calling your
4 primary finding does not contain the word
5 "obviousness"; correct?

6 A. So I'll say it again. I think that
7 it's my opinion that each and every claim
8 limitation of the '393 patent is taught in the
9 MSI-high study record alone and in combination
10 with prior art references for a person of
11 ordinary skill in the art as of July 10, 2015.

12 Q. And when you said that, you did not
13 use the word "obvious"; correct?

14 A. Correct.

15 Q. And in your declaration, you do not
16 provide opinions on nexus; is that correct?

17 ATTORNEY RATLIFF: I object to the form
18 of the question, as well as to the premise of
19 the question.

20 A. So in my declaration, I provide in
21 .12 a discussion about secondary
22 considerations alleged by JHU and find that
23 they were fundamentally flawed, as I detailed,
24 because many of them refer to publications
25 that were not evaluated at the critical date
26 of July 10, 2015, and thus I think they're

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 flawed in their presentation.

3 Q. But as part of your analysis in
4 .12, you did not provide a nexus analysis;
5 correct?

6 ATTORNEY RATLIFF: I object to the form
7 of the question, as well as to the premise of
8 the question.

9 A. So my analysis in .12 is that the
10 secondary considerations are flawed and that
11 they are not applicable as of the critical
12 date of July 10, 2015.

13 Q. And your .12 does not use the word
14 "nexus"; correct?

15 A. My finding in .12 is that the
16 secondary considerations are fundamentally
17 flawed as of the date of July 10, 2015, and
18 thus don't form the basis for further
19 argument.

20 Q. And that does not contain the word
21 "nexus"; correct?

22 A. Correct.

23 Q. So if you look at Header Number 7
24 in your table of contents, you say: The
25 claims of the '393 patent are taught or

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 suggested by the prior art.

3 What does it mean for the prior art
4 to teach or suggest the claims of the '393
5 patent?

6 A. I'm not sure I understand the
7 question.

8 Q. Well, you wrote the words: The
9 claims of the '393 patent are taught or
10 suggested by the prior art; correct?

11 A. I did write those words, yes.

12 Q. Okay. What does it mean for the
13 claims of the '393 patent to be taught or
14 suggested by the prior art?

15 A. It means that the prior art
16 contains the claims of the '393 patent from
17 the perspective of a person of ordinary skill
18 evaluating the prior art on July 10, 2015.

19 Q. What's the difference between
20 teaching and suggesting?

21 A. So some -- I would say teaching
22 refers to things that are said explicitly and
23 suggestion are things that are implicit.

24 Q. And how did you assess whether the
25 prior art taught claims of the '393 patent?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. I'm sorry, can you repeat that?

4 Q. How did you assess whether the
5 prior art taught the claims of the '393
6 patent?

7 A. I utilized a perspective of a
8 person of ordinary skill and the available
9 prior art as of July 10, 2015, analyzed the
10 claims in the '393 patent and then determined
11 or looked to see whether they were taught in
12 the prior art.

13 Q. How did you assess whether the
14 prior art suggested the claims of the '393
15 patent?

16 A. So in the same way I looked at the
17 claims in the '393 patent and what was
18 reported in the prior art as of July 10, 2015,
19 and using the perspective of a person of
20 ordinary skill, determined what would be
21 suggested by what was written in the prior
22 art.

23 Q. In your declaration, do you provide
24 an opinion on reasonable expectation of
25 success?

26 A. Sorry. Could you repeat the

3 question?

4 Q. In your declaration, do you provide
5 an opinion on reasonable expectation of
6 success?

7 A. I'm sorry, what do you mean by "an
8 opinion on reasonable expectation of success"?

9 Q. So maybe it will help to look at an
10 example. Can you go to Page 68 of 102.

11 A. Yes, I'm there.

12 Q. Okay. Oh, I'm sorry, Page 59 of
13 102.

14 A. Yes.

15 Q. And you see at the very bottom and
16 continuing onto the next page it says:
17 Additional Dr. Neugut explains that the state
18 of the art known to the POSA as of July 10,
19 2015 --

20 A. I'm sorry, I don't think I have the
21 right page.

22 I've got it now. Thank you.

23 Q. Got it.

24 July 10, 2015, would counsel the
25 POSA to carry out the methods of treatment
 found in the MSI-high study record with a

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 reasonable expectation of success.

3 Do you see that?

4 A. I do see that, yes.

5 Q. Okay. So you're providing opinions
6 on reasonable expectation of success?

7 A. So I'm providing an opinion that a
8 POSA would be motivated to carry out the
9 clinical trial described in the MSI-high study
10 record with a reasonable expectation of
11 success.

12 Q. And you agree with Dr. Neugut on
13 that point; correct?

14 A. I'm not sure what you mean by that.

15 Q. So you say that Dr. Neugut explains
16 the state of the art known to a POSA as of
17 July 10 would counsel the POSA to carry out
18 the methods of treatment found in the MSI-high
19 study record with a reasonable expectation of
20 success.

21 Do you agree with that statement?

22 A. So, yes, I agree with Dr. Neugut,
23 that the state of the art at the relevant time
24 of July 10, 2015 would motivate a POSA to
25 carry out the methods of treatment found in

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 the study record with a reasonable expectation
4 of success, because as I state, the POSA would
5 have known that physicians had successfully
6 treated a colorectal cancer patient who was
7 MSI-high with a PD-1 inhibitor with a complete
8 response and that pembrolizumab was approved
9 for another oncology indication prior to that
10 date.

11 Q. Did you apply the same standard for
12 reasonable expectation of success that
13 Dr. Neugut applied?

14 A. I don't know what Dr. Neugut's
15 reasonable expectation of success standard is,
16 but I utilized my standard in independently
17 evaluating what a POSA would have done at that
18 time.

19 Q. Okay. And what was your standard
20 that you apply for reasonable expectation of
21 success?

22 A. So the standard I utilized is
23 whether a person of ordinary skill, who was
24 familiar with the prior art and knew about
25 success of treating MSI-high colon cancer in
26 one patient and the success of pembrolizumab

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 in other cancers, would be motivated to treat
4 a patient according to the method described in
5 the MSI study record and expect that that
6 would provide benefit for the patient over not
7 doing that.

8 Q. When you say "treat a patient
9 according to the method described in the
10 MSI-high study record," is that patient
11 MSI-high or not?

12 A. So in my previous example, as I
13 stated, I think a POSA would have been
14 motivated to treat an MSI-high colorectal
15 cancer patient with the method described in
16 the MSI-high study record based on the
17 knowledge at that time that a previous patient
18 with MSI-high colon cancer had a complete
19 response and that pembrolizumab is approved
20 for other immunotherapy indications in cancer
21 with a reasonable expectation of success for
22 that patient.

23 Q. All right.

24 Dr. Oberstein, if you would turn to
25 Paragraph 21 in your declaration.

 And in Paragraph 21 you write: I

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 understand that JHU argues that the term "in
4 response to" should be construed to mean in
5 reaction to; correct?

6 A. That's correct.

7 Q. Okay. And you write further: I
8 understand that the parties do not dispute
9 that the term "in response to" requires
10 causality; correct?

11 A. That's correct.

12 Q. Okay. Is Merck -- strike that.
13 Are you offering a construction of
14 the term "in response to"?

15 A. That's different than what I write.

16 Q. Let's try it this way: What
17 meaning of "in response to" did you apply in
18 forming your opinions?

19 A. So as I wrote there, I understand
20 that the parties do not dispute that the term
21 "in response to" requires causality and that's
22 what I utilized.

23 Q. So you are not using a construction
24 of the term "in response to"; correct?

25 ATTORNEY RATLIFF: I object to the form
of the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. I'm not sure what you mean by
4 "construction."

5 Q. Are you applying the plain meaning
6 of "in response to"?

7 ATTORNEY RATLIFF: I object to the form
8 of the question, as well as to the premise of
9 the question.

10 A. I don't know what you mean by
11 "plain meaning." I understand that the
12 parties do not dispute that the term "in
13 response to" requires causality and that's
14 what I utilized.

15 Q. Okay. So you used the term "in
16 response to" with those words, with the
17 addition that it requires causality; is that
18 correct?

19 ATTORNEY RATLIFF: I object to the form
20 of the question.

21 A. That's correct.

22 Q. Okay. So in forming your opinions
23 in your declaration, you did not use -- you
24 did not interpret "in response to" to mean
25 after; correct?

26 A. So as I stated here, I went with

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 what I understand to be the opinion of both
4 parties that the term "in response to"
5 requires causality.

6 Q. Okay. So in forming your opinions,
7 how did you assess causality with respect to
8 the term "in response to"?

9 A. I'm sorry, I don't understand the
10 question.

11 Q. So you said that you interpreted
12 "in response to" as meaning in response to
13 with a requirement that there be causality;
14 correct?

15 A. Correct.

16 Q. Okay. How did you determine that
17 there was causality with respect to the term
18 "in response to"?

19 ATTORNEY RATLIFF: It's the same
20 question. I object to the form of the
21 question.

22 A. I still am not sure if you mean in
23 the study record, in the patent, in the --

24 Q. What does it mean that "in response
25 to" requires causality?

 A. It means that the action is taken

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 in response to the first finding.

4 Q. How did you determine that a given
5 action was taken in response to with
6 causality?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So I don't understand the question,
10 but let me go back to my finding, which is
11 that in the ClinicalTrials.gov study record,
12 which was available to a person of ordinary
13 skill as of July 10, 2015, there is a cohort
14 of patients who are required to be enrolled
15 with MSI positive colorectal cancer.

16 Q. Uh-huh.

17 A. So I think a person of ordinary
18 skill reading that requirement would
19 understand that in order to be enrolled in
20 this study and receive treatment in that arm,
21 a subject would have to have MSI-high
22 colorectal cancer and then be treated with an
23 effective dose of pembrolizumab after
24 determining that fact.

25 Q. So the evidence of causality that
 you're relying on is the fact that Arm 1

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 described in what you call the MSI-high study
4 record includes only MSI-high colorectal
5 cancer patients?

6 ATTORNEY RATLIFF: I object to the form
7 of the question, as well as to the premise of
8 the question.

9 A. So I'm stating that in the MSI
10 study record, MSI-high study record, Arm 1
11 describes treating a patient who is MSI
12 positive colorectal cancer with an effective
13 dose of pembrolizumab based on their
14 qualification in that arm as having MSI
15 positive colorectal cancer.

16 Q. So the fact that the patients in
17 Arm 1 were all MSI-high colorectal cancer
18 patients indicates to you that there was
19 causality with treating those patients with
20 pembrolizumab in response to determining that
21 they are MSI-high?

22 ATTORNEY RATLIFF: I object to the form
23 of the question.

24 A. So the fact that that is an
25 inclusion criteria and required in order for a
26 patient to be treated on a trial in that arm

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 means that they have to have that
4 qualification in order to be treated on the
5 trial.

6 Q. And you don't rely on any other
7 evidence in the MSI-high study record to
8 indicate the causality associated with
9 treating in response to determining the
10 patient is MSI-high?

11 ATTORNEY RATLIFF: I object to the form
12 of the question, as well as to the premise of
13 the question.

14 A. So I rely on the information, which
15 I just described to you, which I think is
16 sufficient to indicate causality in Arm 1 for
17 patients with MSI-high colorectal cancer being
18 treated with an effective dose of
19 pembrolizumab in response to being MSI-high.

20 Q. Did Merck inform you that they have
21 previously argued that "in response to" means
22 "as the reaction specifically to"?

23 ATTORNEY RATLIFF: I object to the form
24 of the question, as well as to the premise of
25 the question.

26 A. Sorry. Can you repeat the

3 question?

4 Q. Did Merck inform you that they have
5 previously argued that "in response to" means
6 "as the reaction specifically to"?

7 ATTORNEY RATLIFF: I object to the form
8 of the question, as well as to the premise of
9 the question.

10 A. So I'm not sure if you're
11 suggesting that's different than what I wrote
12 here, which is that the parties do not dispute
13 that the term "in response to" requires
14 causality. That is what I was communicated by
15 Merck. That's what I put in my declaration.

16 Q. So your construction or the meaning
17 that you utilize for "in response to" is
18 consistent with "as the reaction specifically
19 to"?

20 A. Again, I'm not sure what you're
21 trying to clear with those words. Is that
22 different than causality? That's what I used.

23 Q. You tell me.

24 A. So I understand that the parties do
25 not dispute that the term "in response to"
26 requires causality, and that is what I adopted

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
and included in my opinion.

3 Q. If you had used the construction
4 "as the reaction specifically to," would that
5 change your opinion?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. I am not sure. I have to
9 reconsider. In that light, that's not what I
10 used.

11 Q. That's not what you used. Okay.

12 If you would, let's go to
13 Paragraph 23. And you say: I understand the
14 POSA for purposes of my analysis of the '393
15 patent is an oncologist or a medical
16 professional in a related field with at least
17 five years of experience with treating cancer
18 patients; correct?

19 A. That's correct.

20 Q. Okay. And what is the source of
21 that understanding of a definition of a POSA?

22 A. You're asking me where did I get
23 that definition from?

24 Q. Uh-huh.

25 A. So I saw that definition in

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Dr. Neugut's declaration, and then I was
4 advised by my counsel to utilize that
5 definition in preparing my assessment.

6 Q. Okay. What do you mean by a
7 medical professional in a related field?

8 A. So not only oncologists. There are
9 other people who can treat cancer patients,
10 like nurse practitioners or related radiation
11 oncologist who I think would be appropriate as
12 a POSA.

13 Q. So you think a nurse practitioner
14 would qualify as a POSA under Merck's
15 definition?

16 A. It depends on who they were and if
17 they are a medical professional treating
18 cancer patients.

19 Q. Okay. In Paragraph 24 you write:
20 I disagree with JHU's definition for the POSA
21 given that the '393 patent relates to cancer
22 therapy and provides a method of treating a
23 cancer patient; is that correct?

24 A. That is correct.

25 Q. Okay. So you also assessed JHU's
26 definition of the POSA; correct?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. By "assess," do you mean did I
4 review it?

5 Q. Well, you disagree with their
6 definition; correct?

7 A. Correct.

8 Q. So you must have determined that
9 there is something wrong with their
10 definition?

11 A. Correct.

12 Q. Okay. And how did you assess JHU's
13 definition of a POSA?

14 A. Again, I'm not sure I understand.
15 What method did I use to assess it?

16 Q. Are there certain requirements of a
17 POSA that you feel like JHU's definition did
18 not meet?

19 A. So, as I stated here, I disagree
20 with JHU's definition for the POSA because the
21 patent is essentially a cancer therapy patent,
22 so it's a method to give a cancer therapy to
23 patients and it provides a method of treating
24 an actual cancer patient, which is why I think
25 it's not correct to involve someone as a POSA
26 who doesn't have an active role in treating

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 cancer patients and providing this therapy to
3 patients.

4 Q. So in your understanding, a POSA is
5 someone who is actively using the method of a
6 claim?

7 ATTORNEY RATLIFF: I object to the form
8 of the question, as well as to the premise of
9 the question.

10 A. I think a POSA is a person who
11 would be able to appreciate the aspects of the
12 claim and that will be able to assess them.

13 Q. And where did that understanding
14 come from?

15 A. That is the understanding that I
16 think I received from my counsel, but I can't
17 say exactly.

18 Q. And in your opinion, someone who
19 understands the steps of a claimed method of
20 treatment would qualify as a POSA; correct?

21 ATTORNEY RATLIFF: I object to the form
22 of the question.

23 A. Could you repeat the question?
24 Sorry?

25 Q. So in your opinion, someone who

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 understands the steps of a claimed method of
4 treatment would qualify as a POSA?

5 ATTORNEY RATLIFF: I object to the form
6 of the question, as well as to the premise of
7 the question.

8 A. So I don't think understanding the
9 steps alone would qualify a person as a POSA.
10 They'd also have to have some knowledge and
11 experience in applying the methods described
12 in the claims.

13 Q. Uh-huh.

14 A. In this case, a method of providing
15 cancer therapy and treating a cancer patient.

16 Q. Did you determine whether Merck's
17 definition of the POSA would exclude any of
18 the inventors on the '393 patent?

19 A. I did not determine that.

20 Q. Okay. Why not?

21 A. I don't think that was relevant to
22 my assessment and analysis here.

23 Q. Okay. So the inventors on a patent
24 are not relevant to the assessment of a person
25 of ordinary skill with respect to that patent?

26 ATTORNEY RATLIFF: I object to the form

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 of the question, as well as to the premise of
4 the question.

5 A. I'm sorry, what connection are you
6 making between the inventors and the POSA?

7 Q. So I'm just saying -- so in your
8 opinion, looking at the inventors on a patent
9 is not relevant to the assessment of who the
10 person of ordinary skill would be on that
11 patent?

12 ATTORNEY RATLIFF: Is that a statement
13 you're just saying? Or is that a question?

14 A. Is that a question?

15 Q. Yes.

16 In your opinion, looking at the
17 inventors on a patent is not relevant to the
18 assessment of who the person of ordinary skill
19 would be on that patent?

20 ATTORNEY RATLIFF: I object to the form
21 of the question.

22 A. So I don't think that a person of
23 ordinary skill for the purposes of evaluating
24 a patent needs to be an inventor of the
25 patent, if that's what you're asking, because
26 they're not identical roles.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. So it's okay for the definition of
4 a person of ordinary skill to exclude some
5 inventors in your opinion?

6 ATTORNEY RATLIFF: And the inventors
7 you're talking about are inventors that are
8 corrected on the patent or --

9 ATTORNEY BROWN-MARSHALL: Counsel,
10 that's enough with the speaking objections.
11 I'll ask the questions --

12 ATTORNEY RATLIFF: That wasn't an
13 objection. It's a clarification to your
14 question.

15 ATTORNEY BROWN-MARSHALL: That is a
16 speaking objection.

17 ATTORNEY RATLIFF: It's not an
18 objection. If you don't want to respond to my
19 question, then I object to the form of your
20 question.

21 A. So I don't think it's irrelevant,
22 but I don't think that a person in order to be
23 defined as a POSA has to be suitable to be the
24 inventor of the patent.

25 BY ATTORNEY BROWN-MARSHALL:

 Q. And I'm not asking whether they're

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 suitable. I'm saying if your definition of a
4 POSA excludes inventors, is that an acceptable
5 definition of a POSA?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. So I'm not sure.

9 Q. Okay. And in Paragraph 25 you say:
10 All of my opinions expressed in this
11 declaration are from this perspective of the
12 POSA as of the critical date of the '393
13 patent.

14 What do you mean by "this
15 perspective of the POSA"?

16 A. So I defined in Paragraph 23 that I
17 understand the POSA is an oncologist or a
18 medical professional in a related field with
19 at least five years of experience treating
20 cancer patients.

21 The POSA would also have experience
22 in or access to a person with knowledge of
23 clinical trials for therapeutics and how they
24 work, as well as experience with or access to
25 a pathologist with comparable experience.

26 Q. Dr. Oberstein, if you would turn to

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

2 Exhibit 1005. I believe you have a copy in
3 front of you.

4 ATTORNEY BROWN-MARSHALL: Mark this as
5 Exhibit 1005.

6		-	-	-
---	--	---	---	---

7 (Whereupon, document MERCK EX1005,
8 is received and marked as Exhibit 1005 for
9 Identification.)

10 | - - -

11 CERTIFIED STENOGRAPHER: Number 1005.

12 BY ATTORNEY BROWN-MARSHALL:

13 Q. And, Dr. Oberstein, we've talked
14 about this exhibit previously. This is the
15 June 10, 2013 submission to
16 ClinicalTrials.gov; correct?

17 ATTORNEY RATLIFF: I object to the form
18 of the question.

19 A. That is correct.

20 Q. And this ClinicalTrials.gov
21 submission is related to the Clinical Trial
22 Number NCT01876511; correct?

23 A. That is correct.

24 Q. And did you participate in that
25 clinical trial?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. No, I did not.

4 Q. So you didn't have any patients
5 enrolled in that study?

6 A. No, I did not.

7 Q. And if you look starting on Page 1
8 and continuing on to Page 2, there is a list
9 of 28 submissions to ClinicalTrials.gov;
10 correct?

11 A. That is correct.

12 Q. And it's your understanding that
13 all 28 of those submissions are related to
14 Clinical Trial Number NCT01876511?

15 A. I would assume that, but I have not
16 reviewed all 28 of those submissions.

17 Q. Okay. How many of those
18 submissions did you review?

19 A. I don't recall. I definitely
20 reviewed more than one, but I don't recall if
21 I reviewed more than two or three.

22 Q. Okay. And which additional two or
23 three submissions did you review?

24 A. So I recall reviewing probably the
25 one dated June 9, 2015, or Version 11 because
26 that was the one that was closest to the

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
critical date of the patent of July 10, 2015.

3	Q.	Uh-huh.
---	----	---------

4 A. I don't recall if I looked at other
5 ones as well.

6 Q. Okay. But you don't rely on that
7 June 9, 2015 submission in your declaration;
8 correct?

9 A. That is correct. I rely on the one
10 in front of us.

11 Q. If you would turn to Page 5 of the
12 exhibit. And you see about two-thirds of the
13 way down under eligibility there is a
14 category: Criteria, inclusion criteria.

15	Do you see that?
----	------------------

16 A. Yes, I see that.

17 Q. Okay. What is the purpose of
18 inclusion criteria in a clinical trial?

19 A. As the name implies, inclusion
20 criteria is something that is necessary to be
21 accurate to be included in the clinical trial.

22 Q. And looking at the inclusion
23 criteria in this exhibit, nothing in those
24 inclusion criteria requires that the patients
25 have a certain stage of cancer; correct?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the form
4 of the question.

5 A. So I don't think anything in the
6 inclusion criteria says about the stage of
7 cancer, but a person of ordinary skill in the
8 art would understand that if a patient is
9 going on a clinical trial, it would only be
10 appropriate at that time when they're
11 evaluating this clinical trial record to be a
12 person who has metastatic or incurable
13 colorectal cancer and has already progressed
14 on one or two lines of therapy, specifically
15 two lines if possible, before it would be
16 appropriate to go on a clinical trial as
17 recommended in ClinicalTrials.gov.

18 Q. So it's your opinion that there are
19 additional inclusion criteria that are
20 unstated in this MSI -- what you called the
21 MSI-high studied record?

22 ATTORNEY RATLIFF: I object to the form
23 of the question.

24 A. So I'm not sure what you mean by
25 "inclusion criteria." I think that a person
of ordinary skill reading this study record

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 would understand a certain thing about the MSI
4 positive colorectal cancer and would
5 understand that it's only appropriate for that
6 person to go on a trial if they have
7 metastatic disease and have progressed in
8 prior therapy.

9 Q. The people reading these
10 submissions on ClinicalTrials.gov, they're not
11 limited to what you define as a person of
12 ordinary skill in the art; correct?

13 A. That is correct. This is an open
14 document. Anyone can read it.

15 Q. Okay. So for a colorectal cancer
16 patient reading the MSI-high study record,
17 they're going to look at these inclusion
18 criteria and they're going to think, Well, it
19 doesn't say that I have to be Stage 4, I'm
20 Stage 2, I could potentially enroll; correct?

21 A. Is that a question?

22 ATTORNEY RATLIFF: I object. It sounds
23 like it is a question. I object to the form
24 of the question, if it is a question.

25 A. So I don't really know what a
 patient or someone else looking at this would

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 say. I evaluated this and reported on this
4 from the perspective of a person of ordinary
5 skill in the art as of July 10, 2015, and at
6 that time, a POSA would have looked at this
7 and said, If this clinical trial is being
8 tested in MSI positive colorectal cancer,
9 that's referring to a patient who has advanced
10 disease and has failed prior therapy.

11 Q. Even though that's not explicitly
12 stated in the inclusion criteria?

13 ATTORNEY RATLIFF: Hold on.

14 I object to the form of the question,
15 as well as to the premise of the question.

16 A. I think that would be obvious to a
17 POSA looking at this document.

18 Q. And there is nothing in the
19 inclusion criteria that explicitly requires
20 prior therapy; correct?

21 A. As I just stated, there is nothing
22 that explicitly says one or two prior
23 therapies are needed, but a POSA looking at a
24 study of a novel therapy in MSI positive
25 colorectal cancer would understand and know
26 that this person has to have advanced

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 incurable disease and have progressed from
4 prior therapy.

5 Q. In your clinical trials that you've
6 conducted, if prior therapy is required for a
7 patient to enroll, have you explicitly stated
8 that in the inclusion criteria?

9 A. I don't recall specifically. I'd
10 have to look at those references to answer
11 that.

12 Q. Have you -- in the clinical trials
13 that you have designed, have you ever assumed
14 that doctors would understand what your
15 inclusion criteria are even if you don't list
16 them?

17 A. I've used different standards I
18 would say in submitting information, but
19 absolutely understand that someone else
20 reading this has to have some knowledge in
21 order to interpret it, in light of what
22 they're going to be using it for, and it would
23 be very customary to rely on an outside expert
24 or, sorry, an outside POSA to evaluate what
25 I'm writing in ClinicalTrials.gov posting.

26 Q. Can you identify any clinical trial

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 that you've conducted in which metastatic
3 cancer was a requirement in which you haven't
4 explicitly written that in the inclusion
5 criteria?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. You mean the inclusion criteria on
9 ClinicalTrials.gov

10 Q. Yes.

11 A. So I've not reviewed my postings
12 and I can't tell you whether that has occurred
13 or not occurred.

14 Q. Would you be comfortable with a
15 ClinicalTrials.gov submission for a clinical
16 trial that required patients that have
17 metastatic cancer, but does not specifically
18 include metastatic cancer in the inclusion
19 criteria?

20 ATTORNEY RATLIFF: I object to the form
21 of the question.

22 A. What do you mean by "comfortable"?

23 Q. Well, you previously testified that
24 you review and sign off on the
25 ClinicalTrials.gov submissions for your

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 clinical trials; correct?

4 A. That is correct.

5 Q. Okay. If you were conducting a
6 clinical trial in which metastatic cancer was
7 required for enrollment, would you be
8 comfortable signing off on the
9 ClinicalTrials.gov submission that did not
10 list metastatic cancer in the inclusion
11 criteria?

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 A. So it's a theoretical question and
15 I'm not 100 percent sure what I would do in
16 the real moment, but I would be very confident
17 that anyone with experience treating
18 colorectal cancer patients, who is interested
19 in putting a patient on the trial, learning
20 about the trial, would understand from this
21 description that this is relevant for a
22 patient with advanced cancer who has failed
23 prior chemotherapy.

24 ATTORNEY RATLIFF: And I'll just note
25 for the record that when Dr. Oberstein said
26 "this description," he was pointing with his

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
fingers to Exhibit 1005.

3 Q. Is it your opinion that if a
4 colorectal cancer patient who was not
5 metastatic would be excluded from this
6 clinical trial based on Exhibit 1005?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So I don't think that Exhibit 1005
10 is an exhaustive list of inclusion and
11 exclusion criteria for a specific patient, but
12 I think that a person of ordinary skill in the
13 arts reading this clinical trial would not
14 expect that they would be able to enroll a
15 nonmetastatic patient who had not failed prior
16 chemotherapy.

17 Q. You say that they would not expect
18 that a patient with nonmetastatic colorectal
19 cancer would be able to enroll in a study that
20 was proposed by Exhibit 1005, but would they
21 understand that that patient would necessarily
22 be excluded?

23 A. So I think a POSA would understand
24 that that patient would be excluded based on
25 the fact that it is not standard of care and

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 was not at that time to enroll a patient in
4 experimental clinic trial if they have
5 metastatic colorectal cancer and have not
6 received two lines of therapy or if they're
7 nonmetastatic and they could be cured by
8 surgery, the standard of care would be to take
9 them to surgery to remove their tumor.

10 Q. Are there nonmetastatic colorectal
11 cancers that cannot be cured by surgery?

12 A. So there are times where colorectal
13 cancer can grow locally to such an extent that
14 either it can't be cured by surgery or the
15 person is too sick and, therefore, they can't
16 undergo surgery.

17 Q. And I think you used the term
18 locally advanced cancer in your declaration to
19 describe those types of cancers; correct?

20 A. That is correct.

21 Q. Okay. So would a treating
22 oncologist who has a colorectal cancer patient
23 with locally advanced colorectal cancer expect
24 their patient to be excluded from the clinical
25 trial proposed by Exhibit 1005?

26 ATTORNEY RATLIFF: I object to the form

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 of the question.

4 A. So that's a much more complicated
5 group of patients, because a lot of it depends
6 on other factors. I think if you look at the
7 treatment guidelines, which we have from the
8 NCCN, they group together in many ways locally
9 advanced unresectable patients and metastatic
10 patients. They're not -- excuse me, as I said
11 earlier, the exact same patient population.
12 There are other factors, including whether a
13 patient has measurable disease, based on
14 whether they have something that can be
15 measured on a CAT scan or by actual
16 measurements.

17 Q. So there is some group of
18 nonmetastatic colorectal cancers that a person
19 of ordinary skill would expect would be able
20 to be enrolled in the clinical trial proposed
21 by Exhibit 1005?

22 ATTORNEY RATLIFF: I object to the form
23 of the question, as well as to the premise of
24 the question.

25 A. So I think that a person of
ordinary skill would have to evaluate a

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 locally advanced nonmetastatic patient who has
4 already received and progressed in prior
5 therapy to determine if they would be suitable
6 for the trial based on their other treatment
7 options and whether this was possible.

8 Q. But there is nothing in
9 Exhibit 1005 that excludes that nonmetastatic
10 locally advanced colorectal cancer patient?

11 ATTORNEY RATLIFF: I object to the form
12 of the question.

13 A. So there are other criteria, of
14 course, in 1005 such as having measurable
15 disease, but if the person met all the other
16 criteria, this is not necessarily excluding
17 them if they have received two lines of prior
18 therapy and progressed, so just to add a
19 little clarity there I think I can.

20 So in general when we talk about
21 staging of colorectal cancer patients, if a
22 person has cancer that is initially locally
23 advanced and then it grows, it progresses on
24 chemotherapy, we generally think of that as
25 recurrent and, therefore, Stage 4 cancer or,
 quote/unquote, metastatic.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 So again, because this wouldn't be
4 appropriate for a newly diagnosed patient who
5 had not had chemotherapy, essentially everyone
6 who fit that criteria would be under the
7 category of metastatic.

8 Q. In your opinion, would a colorectal
9 cancer patient who had refused at least one
10 prior therapy qualify for the clinical trial
11 proposed by Exhibit 1005?

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 A. So I think that if a patient met
15 the criteria in the NCCA guidelines for
16 clinical trial evaluation, they would be
17 appropriate for the trial, would be very
18 unusual to enroll a patient in a trial with an
19 experimental agent if we have effective
20 chemotherapy for that patient.

21 If for some reason that patient
22 cannot receive the chemotherapy, such as an
23 allergy to the medication or some other
24 disorder, then it would be reasonable to give
25 them the next available therapy, which is a
26 clinical trial.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Okay. So a patient who had an
4 allergy to the available chemotherapy would
5 not be excluded from the clinical trial
6 proposed in Exhibit 1005?

7 ATTORNEY RATLIFF: I object to the form
8 of the question.

9 A. So there is not enough information
10 in this trial to say whether that person would
11 be included or excluded.

12 Q. But there is nothing in
13 Exhibit 1005 that explicitly excludes someone
14 who had refused chemotherapy because of an
15 allergy?

16 ATTORNEY RATLIFF: I object to the form
17 of the question.

18 A. So I would say for a person of
19 ordinary skill in the art, we would generally
20 not accept a patient on a clinical trial
21 because they, quote, refused chemotherapy. It
22 would only be appropriate if they could not
23 receive the chemotherapy because of an allergy
24 or some other life-threatening condition.

25 Q. But that patient who is otherwise
26 qualified under the inclusion and exclusion

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

criteria in Exhibit 1005 would not be excluded
from this clinical trial if they had not
received a prior therapy because of an allergy
to the available chemotherapy?

6 ATTORNEY RATLIFF: I object to the form
7 of the question.

8 A. So I don't think a POSA can
9 determine if that person was excluded or based
10 on what's available in 1005.

11	Q. Why not?
----	-------------

12 A. Because it does not speak to that
13 point.

14 Q. Because it doesn't say anything
15 about prior therapies?

16 ATTORNEY RATLIFF: I object to the form
17 of the question, as well as to the premise of
18 the question.

19 A. So, again, a POSA reading this
20 clinical trial report would understand that a
21 patient with metastatic colorectal cancer is
22 only appropriate for clinical trial based on
23 current guideline or guidelines in July 2015
24 if they had failed first and second line
25 chemotherapy options, which are standard and

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 life prolonging options. They would not have
4 placed a person on a clinical trial such as
5 this if they didn't fit that criteria.

6 Q. So what do the guidelines say about
7 a colorectal cancer patient who those first
8 and second-line therapies are not available to
9 them because of let's say an allergy?

10 A. So I cannot think of an instance in
11 which a patient can receive either of those
12 chemotherapies because of an allergy. I think
13 it's possible that a person would have an
14 allergy to one of those medications and not be
15 able to receive it, but the standard of care
16 would be to give the medication that -- either
17 a modified dose or some way to try to overcome
18 that limitation. If there was absolutely no
19 way to give the chemotherapy, then that person
20 would be suitable for third line therapy
21 because they didn't have a second line option.

22 Q. And that third line therapy would
23 include clinical trials?

24 A. So according to the guidelines, it
25 would include consideration of a clinical
26 trial.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: Counsel, we've been
4 going for an hour. Let's take a break.

5 ATTORNEY BROWN-MARSHALL: That's fine.

6 CERTIFIED STENOGRAPHER: Off the
7 stenographic record at 2:12 p.m.

8 - - -

9 (Whereupon, a short recess was
10 taken.)

11 - - -

12 CERTIFIED STENOGRAPHER: Back on the
13 stenographic record at 2:28 p.m.

14 BY ATTORNEY BROWN-MARSHALL:

15 Q. Dr. Oberstein, I want you to assume
16 that you are a GI oncologist who has a
17 colorectal cancer patient that you would like
18 to enroll in the study proposed by Exhibit
19 1005, okay?

20 A. Okay.

21 Q. Okay. And that colorectal cancer
22 patient otherwise meets all the inclusion
23 criteria, doesn't meet any of the exclusion
24 criteria, and its enrollment has just begun,
25 so there are open slots in all three of the
arms of the proposed trial, okay?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 ATTORNEY RATLIFF: I object to the
4 assumption that's leading up to this question.

5 A. I'm with you so far.

6 Q. Okay. You're with me?

7 A. Very hypothetical. Yes.

8 Q. Okay. So this hypothetical
9 colorectal cancer patient's tumor is tested
10 and they are determined to be MSI-high, would
11 that patient be enrolled in Arm 1 of the
12 proposed clinical trial?

13 ATTORNEY RATLIFF: I object to the form
14 of the question, as well as to the portion of
15 the question illuminating the hypothetical
16 parts of the question.

17 A. So can you tell me more about this
18 hypothetical question -- patient, sorry? What
19 age are they? What stage? What have they had
20 prior treatment with?

21 Q. Let's just assume that all of those
22 factors are such that they would qualify to be
23 in the clinical trial. So let's assume the
24 patient is qualified to be in the clinical
25 trial, okay? That colorectal cancer patient
26 is tested for MSI and tests positive for

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

2 MSI-high. They would be enrolled in Arm 1 of
3 the clinical trial; correct?

4 ATTORNEY RATLIFF: I object to the form
5 of the question.

6 A. So, again, I'm not following the
7 exact patient we're talking about. So can you
8 be a little clearer on what have they
9 previously been treated with? What else do we
10 know about them, etc.?

11 Q. So we don't need to know. They are
12 otherwise qualified. Whatever the
13 qualifications are, they've been enrolled in
14 the study.

15 ATTORNEY RATLIFF: I object to this
16 premise of we don't need to know.

17 Q. So let's assume that there is a
18 colorectal cancer patient who has qualified
19 and enrolled in the study proposed in
20 Exhibit 1005, their colorectal cancer is
21 tested and they are determined to be MSI-high,
22 which arm would they be enrolled in?

23 ATTORNEY RATLIFF: I object to the form
24 of the question.

25 A. I'm really not sure what you're

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

trying to say, but I don't think a patient could be enrolled in a trial without knowing what arm they'd be enrolled into. So you would need to have the MSI testing prior to enrolling them in the trial. So I'm not clear if you said that or not.

8 Q. Okay. So let's assume that you
9 have a colorectal cancer patient who is
10 MSI-high and who is enrolled in Arm 1 of the
11 proposed clinical trial, how would that
12 patient be treated?

13 ATTORNEY RATLIFF: I object to the form
14 of the question.

15 A. So in the arms of intervention
16 section of the clinical study record, it says
17 that: Expect numbers, that the MSI positive
18 colorectal cancer patient would be treated
19 with NK3475, which is pembrolizumab,
20 10 milligrams per kilogram every 14 days.

21 Q. Let's assume that you have a
22 colorectal cancer patient who is MS stable, so
23 not MSI-high, and who is enrolled in Arm 2 of
24 the proposed clinical trial, how would that
25 patient be treated?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So in the same table, an MSI
4 negative colorectal cancer patient would be
5 treated with MK3475, 10 milligrams per
6 kilogram every 14 times.

7 Q. And that's the same treatment as
8 the MSI-high colorectal cancer patient
9 enrolled in Arm 1; correct?

10 A. That is correct. It's called MSI
11 positive in this table, but yes.

12 Q. And, Dr. Oberstein, in your
13 declaration, you provide opinions regarding
14 JHU's evidence of secondary consideration; is
15 that correct?

16 ATTORNEY RATLIFF: I object to the form
17 of the question, as well as to the premise of
18 the question.

19 A. I'm sorry, can you repeat the
20 question?

21 Q. In your declaration, you provide
22 opinions regarding JHU's evidence of secondary
23 considerations; is that correct?

24 ATTORNEY RATLIFF: I object to the form
25 of the question, as well as to the premise of
26 the question.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. So I do provide opinions regarding
4 JHU's alleged secondary considerations.

5 Q. Okay. What are secondary
6 considerations?

7 A. I understand that secondary
8 considerations are other things that might be
9 included to look for obviousness of a patent
10 claim, such as -- I don't recall what they
11 are, but a skepticism about the claim
12 treatment methods.

13 Q. So the secondary considerations
14 that you evaluated were skepticism --

15 A. I evaluated all the ones they
16 quoted. That's just the one that I mentioned
17 first.

18 Q. And how did you evaluate the
19 secondary considerations that you evaluated?

20 A. So as I detail, and I'm happy to go
21 through all of them, JHU's experts raised
22 several areas of secondary considerations.
23 One of them was that people were skeptical
24 about the claimed methods of treatment.

25 As I noted in Paragraph 180, I
think that was a flawed comparison, of course,

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 because the critical time at which we're
4 evaluating this '393 patent is July 10, 2015,
5 and those discussions about skepticism that
6 happened on a personal level were from a very
7 different time period and were clearly not
8 reported for July 2015.

9 Q. So you're of the opinion evidence
10 of secondary considerations that is dated
11 prior to the priority date is relevant?

12 ATTORNEY RATLIFF: I object to the form
13 of the question.

14 A. That is not correct.

15 I think what's really important is
16 what the person of ordinary skill in the art
17 would have felt at the time of the priority
18 date, and there is no evidence of skepticism
19 at the time of the priority date.

20 On the contrary, there was a lot of
21 enthusiasm about doing this research as
22 evidenced by the fact that BMS and others had
23 started their own clinical trials testing
24 MSI-high colorectal cancer with PD-1
25 antibodies.

26 Q. As of July 10, 2015, were results

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 available for the BMS clinical trial testing
4 MSI-high colorectal cancer that you mentioned?

5 A. There were no results that I know
6 of that were available. As you mentioned BMS,
7 there were, of course, results from a prior
8 single patient where MSI-high colon cancer was
9 treated with nivolumab, which was a drug made
10 by BMS, and a person of ordinary skill would
11 have known the public information that that
12 patient had a complete response after
13 treatment with PD-1 antibody.

14 Q. But that was a single patient;
15 correct?

16 A. That was a single patient with
17 MSI-high colorectal cancer.

18 Q. And as of July 10, 2015, were any
19 results available for the Merck clinical trial
20 in MSI-high colorectal cancers that you
21 mentioned?

22 A. Which Merck study? I'm sorry?

23 Q. Well, you cited a Merck study as
24 evidence that there would not be skepticism;
25 correct?

26 A. So are you referring to

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240
Exhibit 1148, Keynote 154.

3 Q. Is that the exhibit that you rely
4 on?

5	A. Yes.
---	---------

6 Q. Okay. So as of July 10, 2015, the
7 Merck clinical trial that you rely on in
8 Exhibit 1148 did not have results available;
9 correct?

10 A. To the best of my knowledge, that
11 is correct, but a person of ordinary skill
12 would know, first of all, that Merck was
13 conducting that study because of the public
14 posting. They would also know about the BMS
15 study. They would know about the single
16 patient who had a complete response, and I
17 think they would have utilized that
18 information to be motivated to conduct this
19 trial and to expect positive results from a
20 clinical trial of a checkpoint blockade in
21 MSI-high colorectal cancer.

22 Q. The ClinicalTrials.gov announcement
23 that you rely on in conjunction with the Merck
24 study that's dated May 29, 2015; correct?

25 A. That is correct.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Does that date ring a bell for you?

4 A. No.

5 Q. No?

6 That's also the date that the
7 results of the Hopkins trial that was proposed
8 in Exhibit 1005 were publicly announced?

9 ATTORNEY RATLIFF: I object to the form
10 of the question, as well as to the premise of
11 the question.

12 A. You mean the MSI-high study that
13 we've been discussing?

14 Q. I mean, the clinical trial that's
15 proposed in Exhibit 1005.

16 A. Correct.

17 Q. Okay. So the Merck trial was
18 announced the same day that the Hopkins
19 results were announced?

20 ATTORNEY RATLIFF: Wait. They're not
21 Hopkins results.

22 I object to the form of the question,
23 as well as the premise of the question.

24 A. So, again, I will restate it, but I
25 agree that the date that the -- this MSI study
results were initially announced was the same

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

date that Merck posted the second study on

ClinicalTrials.gov.

4 Q. And that second study posted by
5 Merck on ClinicalTrials.gov was a follow-up
6 study to the clinical trial proposed in
7 Exhibit 1005; correct?

8 ATTORNEY RATLIFF: I object to the form
9 of the question.

10 A. What do you mean by a follow-up
11 study?

12 Q. That Merck study that was proposed
13 in Exhibit 1148 followed on the results of the
14 Johns Hopkins study proposed in Exhibit 1005;
15 correct?

16 ATTORNEY RATLIFF: I object to the form
17 of the question.

18 A. So I don't know what motivation
19 Merck had in doing that study or what they
20 included in the submission. In Exhibit 1148
21 they proposed a study of the MSI-high
22 colorectal cancer and proposed treating those
23 patients with pembrolizumab.

24 ATTORNEY BROWN-MARSHALL: I'd like to
25 mark as Exhibit 2061.

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

(Whereupon, Merck document JHU2061,
is received and marked as Exhibit 2061 for
Identification.)

CERTIFIED STENOGRAPHER: Number 2061.
BY ATTORNEY BROWN-MARSHALL:

Q. And, Dr. Oberstein, are you familiar with this exhibit?

ATTORNEY RATLIFF: And I'll object to Exhibit 2061 for the purposes of authentication, foundation, and hearsay.

A. I am not familiar with this press release.

Q. Okay. And does this appear to be a Merck news release, dated May 29, 2015?

A. Yes, it does.

Q. And do you see about two-thirds of the way down where it says: Merck, NYSE:MRK, known as MSD outside the United States and Canada, today announced results from the first study evaluating the correlation of benefit with an immunotherapy based on DNA mismatch repair, MMR, deficiency, a well-established

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

form of genetic instability in many cancers
characterized by the loss of function of the
MMR pathway.

5 | Do you see that?

6 A. I do see that, yes.

7 Q. And then it says: The Phase II
8 study led by researchers from Johns Hopkins
9 Kimmel Cancer Center evaluated Merck's
10 anti-PD-1 therapy, Keytruda pembrolizumab, in
11 48 valuable heavily pretreated patients with
12 advanced colorectal cancer and other solid
13 tumors.

14	Do you see that?
----	------------------

15 A. I do see that.

16 Q. And do you understand that this
17 news release is referring to the results of
18 the clinical trial proposed in Exhibit 1005?

19	A. Yes.
----	---------

20 Q. And if you would turn to Page 2 and
21 then the first full paragraph, do you see
22 where it says: Based on the encouraging
23 results of this early study, Merck will
24 initiate a registration Phase II study Keynote
25 164 to evaluate the efficacy and safety of

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

Keytruda based on mismatch repair status and
locally advanced unresectable or metastatic
Stage 4 colorectal cancers.

5	Do you see that?
---	------------------

6 ATTORNEY RATLIFF: You read that
7 incorrectly. I object to the form of the
8 question.

9 A. I do see that statement, that
10 sentence.

11 Q. Okay. Is that Phase II study
12 Keynote 164, is that the study proposed in
13 Exhibit 1148 that you rely on?

14	A. Yes, it is.
----	----------------

15 Q. Okay. And the press release
16 indicates that that study proposed in
17 Exhibit 1148 is based on the encouraging
18 results of this early study; correct?

19 A. The press release does say that,
20 yes.

21 Q. And this early study that it's
22 referring to is the study led by Johns Hopkins
23 University proposed by Exhibit 1005; correct?

24 A. That's correct.

25 Q. Okay. And if you look at the next

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 paragraph, there is a quote from Dr. Roger
4 Dansey, therapeutic area head and senior
5 vice-president oncology, late stage
6 development, Merck Research Laboratories.

7 Do you see that?

8 A. I see that.

9 Q. Okay. And Dr. Dansey says: These
10 exciting results, while early, suggest that
11 evidence of DNA mismatch repair deficiency may
12 be an important way of identifying tumors that
13 are responsive to checkpoint blockade.

14 Do you see that?

15 A. I see that.

16 Q. So Dr. Dansey didn't say that DNA
17 mismatch repair deficiency is conclusively a
18 way of identifying tumors that are responsive
19 to checkpoint blockade; correct?

20 ATTORNEY RATLIFF: Are you asking about
21 in this article or if he's ever said that?

22 ATTORNEY BROWN-MARSHALL: I'm asking
23 about in this article.

24 A. So I didn't read the rest of the
25 article. I'm just seeing this for the first
26 time. The sentence you just read uses the

3 word "maybe."

4 Q. Maybe.

5 And Dr. Dansey goes on to say that:
6 DNA mismatch repair deficiency is an
7 established biomarker in many types of cancer,
8 and these results open the door for research
9 with Keytruda in colorectal cancer and other
10 tumor types with this potentially clinical
11 meaningful tool.

12 Do you see that?

13 A. I see that.

14 Q. So at this point on May 29, 2015,
15 DNA mismatch repair deficiency is not an
16 established biomarker for treatment with
17 Keytruda in colorectal cancer; correct?

18 ATTORNEY RATLIFF: I object to the form
19 of the question.

20 A. So I'm not sure why you say that.

21 Q. Uh-huh.

22 A. Where does this indicate anything
23 about whether Keytruda is an established
24 biomarker for -- whether mismatch repair
25 deficiency is an accomplished biomarker for
26 treatment with Keytruda?

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Well, according to Dr. Dansey, DNA
4 mismatch repair deficiency is a potentially
5 clinically meaningful tool; correct?

6 A. Correct.

7 Q. And he goes on to say: We look
8 forward to initiating a registration Phase II
9 study of Keytruda in patients with colorectal
10 cancer to further explore this genomic
11 biomarker; correct?

12 ATTORNEY RATLIFF: You read that
13 incorrectly. I object to the form of the
14 question.

15 ATTORNEY BROWN-MARSHALL: Okay. I'll
16 read it again.

17 Q. We look forward to initiating a
18 registrational Phase II study of Keytruda in
19 patients with colorectal cancer to further
20 explore this genomic biomarker; correct?

21 A. That is what is written here, yes.

22 Q. Yes. He didn't say that they were
23 applying for FDA approval for treating
24 colorectal cancer based on DNA mismatch repair
25 deficiency at this point; correct?

 ATTORNEY RATLIFF: I object to the form

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 trial described in Exhibit 1148 that you're
4 relying on?

5 A. So I don't think I relied on the
6 initiation either. I relied on the
7 publication of the plan to do that trial,
8 which would have been available to a person of
9 ordinary skill in the arts and would have
10 given that person motivation to conduct a
11 trial according to what was described in the
12 MSI study record, and to expect positive
13 results if they follow the methods of this
14 trial to achieve positive results from
15 treatment of patients with MSI-high colorectal
16 cancer with pembrolizumab.

17 Q. Did you investigate at all the
18 status of Merck's trial proposed in
19 Exhibit 1148 as of July 10, 2015?

20 A. Your question is did I investigate
21 whether it was enrolling patients?

22 Q. The status?

23 A. I do not recall doing that. Again,
24 the reason I reference that study and what
25 reported from is that it was available
publicly to a person of ordinary skill and

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 they would have been motivated by that report
4 to want to conduct a study, treat a patient,
5 and expect a positive result.

6 Q. And by "that report," you're
7 talking about the preliminary submission to
8 ClinicalTrials.gov in Exhibit 1148?

9 A. I'm referring to the submission in
10 1148. I'm not sure why you're calling it
11 preliminary, but that is the exhibit I'm
12 referring to.

13 Q. If you would, Dr. Oberstein, go to
14 Paragraph 183 in your declaration, and if you
15 see about halfway down you write: While
16 Dr. Le did not provide any additional details
17 regarding her alleged observations for when
18 Merck's funding began, this purported evidence
19 is from the time period of the start of the
20 MSI-high study, more than two years before
21 July 10, 2015.

22 Do you see that?

23 A. Yes, I see that.

24 Q. Okay. And you reviewed Dr. Le's
25 declaration; correct?

26 A. Yes, I did.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. Okay. Did you review the exhibits
4 that she cited in her declaration?

5 A. I believe so, but I might have to
6 be refreshed on some of them.

7 Q. And you're engaged as an expert by
8 Merck in this case; correct?

9 A. That is correct.

10 Q. And did you ask Merck when it first
11 funded Dr. Le's study?

12 ATTORNEY RATLIFF: Object.

13 Hold on.

14 Object to the form of the question, as
15 well as to the premise of the question.

16 A. I did not.

17 Q. Okay. Do you believe Merck would
18 have kept records of any funding that it
19 provided for Dr. Le's study?

20 ATTORNEY RATLIFF: I object to the form
21 of the question, as well as to the premise of
22 the question.

23 A. So I'm really not familiar with how
24 Merck keeps records.

25 Q. Uh-huh.

 A. I don't know how long they retain

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

them or where those things are.

3	Q.	Uh-huh.
---	----	---------

4 | A. So I'm familiar with those records.

5 Q. Did Merck or Merck's attorneys
6 provide you with any documentation that showed
7 when they provided the first payments for
8 Dr. Le's study?

9 ATTORNEY RATLIFF: I object to the form
10 of the question. I don't even know what
11 Dr. Le's study is.

12 A. So I don't recall seeing any
13 documentation from my attorneys or from Merck
14 about their funding or provision of drug for
15 the MSI study.

16 | Q. All right.

17 ATTORNEY BROWN-MARSHALL: I'd like to
18 mark as Exhibit 2131.

19 | - - -

20 (Whereupon, document JHU2131, is
21 received and marked as Exhibit 2131 for
22 Identification.)

23 - - -

24 CERTIFIED STENOGRAPHER: Number 2131.

25 THE WITNESS: Thank you.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 BY ATTORNEY BROWN-MARSHALL:

3 Q. And, Dr. Oberstein, I'll represent
4 to you that this is one of the exhibits Dr. Le
5 relied on in her declaration.

6	A. Okay.
---	----------

7	Q. Okay?
---	----------

8 And do you see on the first page
9 where it says: Investigator initiated
10 clinical trial research agreement?

11	Do you see that?
----	------------------

12 A. Yes, I see that.

13 Q. Okay. Did you review this document
14 in preparing your declaration?

15 A. I don't recall.

16 Q. Okay. And if you would just flip
17 to the back page, last page of the exhibit.
18 Do you see that there are some signatures?

19	A. Yes.
----	---------

20 Q. And you see at the bottom it's
21 signed by Dr. Dung Le, M.D., principal
22 investigator?

23	A. Yes.
----	---------

24 Q. Do you see that? Okay.

```
25 |         And then the line above, it's also
```

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 signed by a representative of the Johns
4 Hopkins University, the associate dean of
5 research administration.

6 Do you see that?

7 A. Yes.

8 Q. And then it's also signed by Eric
9 H. Rubin, M.D., on behalf of Merck Sharp &
10 Dohme.

11 Do you see that?

12 A. Yes.

13 Q. And you did not review this exhibit
14 in preparing your declaration?

15 A. I do not recall.

16 Q. All right.

17 ATTORNEY BROWN-MARSHALL: I'd like to
18 mark as Exhibit 2408.

19 - - -

20 (Whereupon, document entitled
21 Amendment #1, is received and marked as
22 Exhibit 2408 for Identification.)

23 - - -

24 CERTIFIED STENOGRAPHER: Number 2408.

25 BY ATTORNEY BROWN-MARSHALL:

26 Q. And, Dr. Oberstein, are you

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
 IPR2024-00240
2 familiar with this document?

3 ATTORNEY RATLIFF: And I object to
4 Exhibit 2048 --

5 THE WITNESS: 2408.

6 ATTORNEY RATLIFF: Thank you.

7 I object to Exhibit 2408 for purposes
8 of authentication, foundation, and hearsay.

9 A. I do not recall looking at this
10 document.

11 BY ATTORNEY BROWN-MARSHALL:

12 Q. Okay. So you didn't review this
13 document in preparing your -- strike that.

14 You did not review Exhibit 2408 in
15 formulating your opinions in your declaration;
16 correct?

17 A. I do not recall doing that.

18 [REDACTED]

[REDACTED]

[REDACTED]

21 A. I see that, yes.

22 ATTORNEY BROWN-MARSHALL: I'd like to
23 mark as Exhibit 2409.

24 - - -

25 (Whereupon, document entitled

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 Amendment #2, is received and marked as
4 Exhibit 2409 for Identification.)

5 - - -

6 CERTIFIED STENOGRAPHER: Number 2409.
7 BY ATTORNEY BROWN-MARSHALL:

8 Q. Dr. Oberstein, are you familiar
9 with Exhibit 2409?

10 ATTORNEY RATLIFF: I object to
11 Exhibit 2409 for the purposes of
12 authentication, foundation, and hearsay.

13 A. So can I just ask was this included
14 in Dr. Le's declaration?

15 Q. No, it was not.

16 A. So I'm not familiar with it.

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 A. I do not believe so.

21 Q. And Merck's attorneys did not
22 provide this document to you?

23 A. I do not recall ever seeing it
24 before.

25 ATTORNEY BROWN-MARSHALL: I'd like to
26 mark as Exhibit 2410.

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

— — —

(Whereupon, document entitled
Amendment #3, is received and marked as
Exhibit 2410 for Identification.)

— — —

CERTIFIED STENOGRAPHER: Number 2410.

BY ATTORNEY BROWN-MARSHALL:

Q. And, Dr. Oberstein, are you familiar with Exhibit 2410?

ATTORNEY RATLIFF: And I'll object to Exhibit 2410 for the purposes of authentication, foundation, and hearsay, and, counsel, do you have another copy of 2410?

ATTORNEY BROWN-MARSHALL: Oh,
apologies.

A. I am not familiar with this document.

A. Correct.

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

A. I do see that, yes.

A. Yes, I do.

Q. Okay. And do you see where it lists first payment?

A. Yes.

ATTORNEY RATLIFF: I object to the form
of the question.

ATTORNEY RATLIFF: I object to the form of the question.

A. That's correct.

ATTORNEY BROWN-MARSHALL: And also I'd like to note for the record that we'd like to designate Exhibits 2408, 2409, and 2410 as confidential under the protective order.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. You can put that aside,
4 Dr. Oberstein.

5 Dr. Oberstein, if you would turn to
6 Paragraph 182 of your declaration. And in the
7 second sentence you write: Dr. Lonberg points
8 to the earlier study of BMS's anti-PD-1 drug
9 that led to a complete response in an MSI-high
10 colorectal cancer patient and reported in
11 Lipson in January 2013 as a comparison to
12 assert that the results the MSI-high study
13 were unexpected because the BMS study failed
14 to produce a response in 32 of 33 patients
15 with colorectal cancer; is that correct?

16 A. That is what it says.

17 Q. Okay.

18 A. I disagree with that statement, but
19 that's what it says.

20 Q. Okay. So in the BMS clinical trial
21 with this drug nivolumab, they reported one
22 complete response in an MSI-high colorectal
23 cancer patient; correct?

24 A. That is correct.

25 Q. And they also reported that it
26 failed to produce a response in 32 of 33

02.19.2025 Deposition of Paul E. Oberstein, M.D.
IPR2024-00240

patients with colorectal cancer; correct?

3 A. Correct. 33 patients were treated.
4 Only one responded and that one had MSI-high
5 colorectal cancer.

6 Q. Okay. What was the MSI status of
7 the other 32 patients who didn't respond?

8 A. I don't believe that was reported
9 by BMS.

10 Q. Okay. So that was not known at the
11 time?

12 A. I don't believe it was known at the
13 time.

14 Q. Okay. All right.

15 If you would turn to Paragraph 185
16 of your declaration.

17 A. I'm there.

18 Q. Okay. And in this paragraph, you
19 are providing opinions on Dr. Goldberg's
20 evidence of a long-felt, unmet need; correct?

21 ATTORNEY RATLIFF: I object to the form
22 of the question.

23 A. His alleged evidence as I outline,
24 yes.

25	Q. What is a long-felt, unmet need?
----	-------------------------------------

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 A. A long-felt, unmet need is a sense
4 among the person of ordinary skill in the art
5 and relevant stakeholders that there is no
6 effective or not adequate effective treatments
7 for a certain condition.

8 Q. And you write that: Dr. Goldberg
9 discusses chemotherapy and targeted therapies
10 available in 2010 to 2015, but does not tie
11 any of this evidence to any of the patent
12 claims; correct?

13 A. That is correct.

14 Q. Why would evidence of chemotherapy
15 and targeted therapies available in 2010 to
16 2015 need to be tied to any of the patent
17 claims?

18 A. So Dr. Goldberg is proposing
19 secondary considerations and proposes that
20 they justify or help speak to the
21 nonobviousness of the patent claims. He
22 doesn't discuss or connect them to any of the
23 patent claims.

24 Q. Well, chemotherapy and targeted
25 therapy as available in 2010 to 2015, those
26 are therapies that are described in the prior

art; correct?

3 A. That is correct.

4 Q. Okay. Why would you need to tie
5 the prior art to the patent claims in order to
6 demonstrate a long-felt, unmet need?

7 A. So the long-felt, unmet need for
8 certain treatment should be relevant to the
9 treatment that you are going to propose to
10 fill that unmet need.

11 And I think that the person of
12 ordinary skill in the art who would have
13 access to MSI-high study record and prior art
14 references that suggest that immunotherapy
15 will be effective in MSI-high colon cancer
16 would anticipate that pembrolizumab or PD-1
17 antibodies would be effective and would be
18 worth conducting a trial to test in MSI-high
19 colorectal cancer with an expectation of
20 success. Chemotherapy and other therapies are
21 not relevant to that specific type of therapy.

22 Q. So as of July 10, 2015, what
23 therapies were available for treating
24 colorectal cancer?

25 A. So Dr. Goldberg goes through a lot

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 of those, but they were essentially
4 chemotherapies and several targeted therapies,
5 as well as some other therapies that fall into
6 the greater rubric of targeted therapy, but a
7 person of ordinary skill in the art as of
8 July 10, 2015 would have been aware of the
9 MSI-high study record, the previous art
10 references, and would have been motivated to
11 treat an MSI-high colorectal cancer patient
12 with pembrolizumab with a reasonable
13 expectation of success.

14 Q. So as of July 10, 2015, Keytruda
15 had not received FDA approval for treatment of
16 any MSI-high cancers; correct?

17 A. That is correct.

18 Q. And as of July 10, 2015, Merck had
19 made zero net sales of Keytruda for colorectal
20 cancer patients; correct?

21 A. So I don't know that, but I -- I
22 don't know that.

23 Q. Okay. Did you speak with
24 Dr. Sheridan about his analysis of the sales
25 of Keytruda for colorectal cancer?

 A. I did not.

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 Q. And as of July 10, 2015, BMS's
4 nivolumab had not received FDA approval for
5 treatment of -- of any MSI-high cancers;
6 correct?

7 A. That is correct.

8 Q. Okay. So any prescription of
9 either Keytruda or nivolumab as of July 10,
10 2015 would have to be an off-label
11 prescription; correct?

12 A. So I think a person of ordinary
13 skill in the art might have contemplated
14 treating a patient off-label, but more
15 accurately they would have tried to enroll a
16 patient in a clinical trial such as that
17 described in the MSI study record to follow
18 those methods to treat a patient who has MSI
19 colorectal cancer with a therapeutic dose of
20 pembrolizumab or nivolumab.

21 Q. But those clinical trials are
22 limited in the number of patients that can be
23 treated under that; correct?

24 A. Correct.

25 Q. So those therapies are not
26 available to patients outside of the clinical

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 trials; correct?

4 ATTORNEY RATLIFF: I object to the form
5 of the question.

6 A. So a clinical trial is not
7 available outside of a clinical trial. There
8 are therapies, of course, that are available
9 off-label as you say.

10 Q. And any prescription of either
11 Keytruda or nivolumab outside of the clinical
12 trial as of July 10, 2015 would have to be
13 off-label; correct?

14 ATTORNEY RATLIFF: For any use? I
15 object to the form of the question.

16 A. So there were FDA approved
17 indications of pembrolizumab as of July 10,
18 2015.

19 Q. So any prescription of either
20 Keytruda or nivolumab for a patient with
21 MSI-high colorectal cancer outside of a
22 clinical trial as of July 10, 2015 would have
23 to be off-label; correct?

24 A. That is correct.

25 Q. Dr. Oberstein, did you review any
statements by Merck to the FDA regarding

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240
3 metastatic MSI-high colorectal cancer patients
4 representing a group of patients with a high
5 unmet medical need?

6 A. I don't recall.

7 ATTORNEY BROWN-MARSHALL: If you want,
8 we can take a short break, and I can figure
9 out if I have any additional questions?

10 ATTORNEY RATLIFF: Sure.

11 CERTIFIED STENOGRAPHER: Off the
12 stenographic record at 3:09 p.m.

13 - - -

14 (Whereupon, a short recess was
15 taken.)

16 - - -

17 CERTIFIED STENOGRAPHER: Back on the
18 stenographic record at 3:20 p.m.

19 BY ATTORNEY BROWN-MARSHALL:

20 Q. Dr. Oberstein, is it your opinion
21 that as of July 10, 2015, metastatic MSI-high
22 colorectal cancer patients did not represent a
23 group of patients with a high unmet medical
24 need?

25 A. So that is not my opinion. I think
that MSI -- I'm sorry, MSI-high colorectal

1 02.19.2025 Deposition of Paul E. Oberstein, M.D.
2 IPR2024-00240

3 cancer?

4 Q. Yes.

5 A. So I think that as of July 10,
6 2015, MSI-high colorectal cancer patients did
7 qualify as a high unmet need. That was the
8 question?

9 Q. Yes.

10 ATTORNEY BROWN-MARSHALL: I have no
11 further questions.

12 Thank you for your time today.

13 THE WITNESS: Okay.

14 ATTORNEY RATLIFF: So, Doctor, I do not
15 have any questions for you.

16 However, I request that this transcript
17 be designated highly confidential under the
18 protective order, and, counsel, we can work
19 out what portions should be not under the
20 confidentiality of the protective order.

21 We're done.

22 (Continued on next page for jurat.)
23
24
25

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

CERTIFIED STENOGRAPHER: Off the
stenographic record at 3:21 p.m.

- - -

(Time noted: 3:21 p.m.)

- - -

PAUL E. OBERSTEIN, M.D.

Subscribed and sworn to before me
this _____ day of _____ 2025.

Notary Public
My Commission Expires:

/

/

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

I wish to make the following changes, for the following reasons:

PAGE LINE

_____	_____	CHANGE:	_____
		REASON:	_____
_____	_____	CHANGE:	_____
		REASON:	_____
_____	_____	CHANGE:	_____
		REASON:	_____
_____	_____	CHANGE:	_____
		REASON:	_____
_____	_____	CHANGE:	_____
		REASON:	_____
_____	_____	CHANGE:	_____
		REASON:	_____
_____	_____	CHANGE:	_____
		REASON:	_____
_____	_____	CHANGE:	_____
		REASON:	_____

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

PAGE LINE

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

CHANGE: _____

REASON: _____

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

C E R T I F I C A T E

I, RICHARD GERMOSEN, Fellow of the
Academy of Professional Reporters, stenographic New
Jersey Certified Court Reporter, New Jersey Certified
Realtime Court Reporter, California Certified
Shorthand Reporter, California Certified Realtime
Reporter, NCRA Registered Diplomate Reporter, and
NCRA Certified Realtime Reporter, do hereby certify:

That PAUL E. OBERSTEIN, M.D., the
witness whose deposition is hereinbefore set forth,
having been duly sworn, and that such deposition is
a true record of the testimony of said witness.

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

IN WITNESS WHEREOF, I have hereunto set
my hand this 20th day of February 2025.



RICHARD GERMOSEN,
FAPR, RDR, CRR, CCR-NJ, CRCR, CSR-CA, CCRR-CA,
NYACR, NYRCR
LICENSE NO. 30XI00184700
LICENSE NO. 30XR00016800
California CSR No. 14391
California CRR No. 198

#	107:1 108:1 109:1	272:1 273:1 274:1	263:2,5,8,11 272:2,6,9,
#1	110:1 111:1 112:1	275:1 276:1 277:1	20 273:24 274:20
303:20	113:1 114:1 115:1	278:1 279:1 280:1	275:8,13 276:10 277:5,
#2	116:1 117:1 118:1	281:1 282:1 283:1	12 278:2,10 280:18
305:2	119:1 120:1 121:1	284:1 285:1 286:1	282:20 289:7,14 290:7,
#3	122:1 123:1 124:1	287:1 288:1 289:1	14 292:18 293:23
306:4	125:1 126:1 127:1	290:1 291:1 292:1	1006
\$	128:1 129:1 130:1	293:1 294:1 295:1	73:9
\$125,000	131:1 132:1 133:1	296:1 297:1 298:1	1007
228:2	134:1 135:1 136:1	299:1 300:1 301:1	74:5
\$2.25	137:1 138:1 139:1	302:1 303:1 304:1	1008
229:22	140:1 141:1 142:1	305:1 306:1 307:1	76:7
\$2.4	143:1 144:1 145:1	308:1 309:1 310:1	1009
228:20	146:1 147:1 148:1	311:1 312:1 313:1	76:15
\$4.5	149:1 150:1 151:1	1	101
224:14,20 225:20,25	152:1 153:1 154:1	1	39:12
227:9	155:1 156:1 157:1	53:22 87:24 98:22,24	1010
\$800	158:1 159:1 160:1	99:3 112:16,18 175:25	76:17
25:23	161:1 162:1 163:1	251:25 252:9,16 253:15	1011
0	164:1 165:1 166:1	264:6 281:10 282:2	77:3
02.19.2025	167:1 168:1 169:1	10	102
8:1 9:1 10:1 11:1 12:1	170:1 171:1 172:1	42:7 44:10 47:5,23	244:9,12
13:1 14:1 15:1 16:1	173:1 174:1 175:1	57:12 63:21 64:11	1084
17:1 18:1 19:1 20:1	176:1 177:1 178:1	69:15 73:16 82:20 83:9	40:14,20 41:3
21:1 22:1 23:1 24:1	179:1 180:1 181:1	137:11,13 139:24	10:16
25:1 26:1 27:1 28:1	182:1 183:1 184:1	198:6,17 205:2 214:21	126:4
29:1 30:1 31:1 32:1	185:1 186:1 187:1	238:3 239:6,17,25	10:29
33:1 34:1 35:1 36:1	188:1 189:1 190:1	240:10,25 241:12,17	126:10
37:1 38:1 39:1 40:1	191:1 192:1 193:1	242:18 243:8,17	11
41:1 42:1 43:1 44:1	194:1 195:1 196:1	244:17,23 245:17,24	220:7,9 224:13 264:24
45:1 46:1 47:1 48:1	197:1 198:1 199:1	251:12 263:15 265:2	1135
49:1 50:1 51:1 52:1	200:1 201:1 202:1	268:4 283:20 284:4	17:24 18:2,15 30:13
53:1 54:1 55:1 56:1	203:1 204:1 205:1	286:3,25 287:17 288:6	1137
57:1 58:1 59:1 60:1	206:1 207:1 208:1	297:8,21 298:18 299:20	17:24 18:2,18 30:13
61:1 62:1 63:1 64:1	209:1 210:1 211:1	307:17 311:22 312:7,	1145
65:1 66:1 67:1 68:1	212:1 213:1 214:1	13,17 313:2,8 314:11,	72:14
69:1 70:1 71:1 72:1	215:1 216:1 217:1	100	1148
73:1 74:1 75:1 76:1	218:1 219:1 220:1	39:9 130:19,23 142:4	40:9 65:19 66:7,17
77:1 78:1 79:1 80:1	221:1 222:1 223:1	271:14	288:2,8 290:13,20
81:1 82:1 83:1 84:1	224:1 225:1 226:1	1001	293:13,17 297:20
85:1 86:1 87:1 88:1	227:1 228:1 229:1	39:21,23 40:9,13,20	298:2,18 299:7,9
89:1 90:1 91:1 92:1	230:1 231:1 232:1	41:2 53:22	1150
93:1 94:1 95:1 96:1	233:1 234:1 235:1	1003	28:23 29:3,6,9
97:1 98:1 99:1 100:1	236:1 237:1 238:1	37:25 38:5,8,11,12	11:05
101:1 102:1 103:1	239:1 240:1 241:1	53:23	158:2
104:1 105:1 106:1	242:1 243:1 244:1	1005	
	245:1 246:1 247:1	72:21 198:21 215:11	
	248:1 249:1 250:1		
	251:1 252:1 253:1		
	254:1 255:1 256:1		
	257:1 258:1 259:1		
	260:1 261:1 262:1		
	263:1 264:1 265:1		
	266:1 267:1 268:1		
	269:1 270:1 271:1		

11:15 158:8 12 240:20 241:4,9,13,15 12:17 215:18,21 14 283:20 284:5 15 73:16 154 288:2 16 233:2,5 164 292:25 293:12 16th 93:3,6 18 29:24 30:17,22 77:14, 18 306:24 180 285:24 182 308:5 183 299:13 185 309:15 188 19:6,19 19 30:17 77:14,18 19th 93:2 1:01 216:3,5 <hr/> 2 2 54:11,14,21 87:25 176:2 228:7 264:7 267:19 283:23 292:20 305:17	 20 24:19,21 72:14 75:17 146:3 168:10,18 2001 54:11 2002 54:11 2003 75:2,8 2006 94:20 95:4 2009 95:4,13 2010 95:13 96:17 99:11 310:9,14,24 2013 77:8 96:17 103:14 198:6,18 263:15 308:10 2014 103:14 2015 42:7 44:10 47:5,23 57:13 63:21 64:11 69:15 82:20 83:9 103:25 104:12,20 105:18 106:3 199:15 214:15,21 237:14 238:3 239:6,17,25 240:10,25 241:12,17 242:18 243:8,17 244:18,23 245:24 251:12 264:24 265:2,7 268:4 278:23 286:3,7,25 287:17 288:6,24 291:17 295:13 297:7,8,21 298:18 299:20 307:17 310:9, 15,24 311:22 312:7,13, 17 313:2,9 314:11,17, 21 315:20  2017 231:15 2018 99:3	2020 231:15 2024 20:10,14 22:3,8 76:25 77:10 2048 304:4 2061 290:25 291:4,7,12 2090 70:16 21 247:24,25 2131 301:18,21,24 23 255:13 262:15 232nd 9:4 24 168:17 256:18 2405 165:4,9,12,15,19 186:13,14 212:20 2406 170:8,12,14,19 174:9 2407 226:5,9,11,16    25 24:19,21 233:7 236:19 262:8 28 264:8,12,15 29 288:24 291:17 295:13 297:7	2:12 280:6 2:28 280:12 2A 176:24 <hr/> 3 3 112:16,19 176:3 306:20 30 24:4,9 25:4,12,14 26:12 78:25 79:9,10 80:5,16, 17,25 81:10 88:13 89:25 137:6 195:2 228:6 233:6,12 32 308:13,25 309:7 33 308:13,25 309:3 393 16:21 30:25 31:20 34:20 39:12 42:4 44:8 45:14 47:3,7 49:4 52:22 57:4,10 58:14 60:2 63:23 67:17 69:12 83:10 89:18 235:14 237:25 238:6,17 239:4, 8,15,23 240:7 241:25 242:4,9,13,16,25 243:4, 9,13,16 255:14 256:20 259:17 262:11 286:3 3:09 315:11 3:20 315:17 <hr/> 4 4 30:23 267:18 275:24 293:4 307:12 4.5 225:8 40 88:13 137:6 4042 165:8
---	--	---	---

48 292:11 <hr/> 5 5 137:11,13 139:24 265:11 5,000 145:24 50 24:4,9 25:4,12,14 26:12 78:25 79:10 80:5,16,17 81:2,10 145:22 195:2 500 194:21 59 244:11 <hr/> 6 644 9:3 650 26:9 68 244:9 <hr/> 7 7 241:23 75 43:10 45:16 7600 79:24 80:4 81:2 7:59 8:4,7 <hr/> 8 8 29:23 30:22 <hr/> 9 9 264:24 265:7	90 38:15,16,17 97 38:16 9:04 69:22 9:16 70:4 <hr/> A a.m. 8:4,7 69:22 70:4 126:4, 10 158:2,8 ability 10:24 129:16 absolutely 62:17 63:7 100:5 106:8 135:7 269:18 279:17 abstract 125:14 153:20 165:22, 23,24 166:6,9 abstracts 196:17 accept 277:19 acceptable 262:3 accepted 115:4 access 130:16 132:18 170:11 180:12,15 182:13 200:23 262:21,23 311:13 accidents 11:3 accomplished 295:24 accountable 138:8 accruing 223:6 accurate 115:19 204:20 229:3 265:21	accurately 122:23 228:24 313:14 achieve 168:9 298:13 acquainted 23:14,15 acquired 219:23 action 250:25 251:4 activated 208:19 active 220:11,13,18 221:17 222:9 224:3 257:25 actively 258:5 activities 73:7 205:4 224:16,21 actual 257:23 274:14 ad 232:25 add 25:2 32:6 67:20 81:11 95:9 181:4 205:25 275:17 added 79:23 addition 78:9 83:6 85:16 117:16 183:4 222:10 249:16 additional 32:9 35:21 61:9,18 62:7 67:6 81:18 83:4,13 176:22 221:24 222:19, 23 244:16 264:21 266:18 299:15 315:8 address 9:2 56:20 57:20 58:6 59:13 61:18 addressing 144:23 adenocarcinoma 171:8 172:14	adenosine 223:8 adequate 310:5 adequately 109:5 administered 8:14 administration 303:4 adopted 254:25 adults 171:7 172:13 advance 112:23 advanced 97:21 114:20 115:3,8, 12,16 135:14,17 166:3 268:8,25 271:21 273:17,22 274:8 275:2, 9,22 292:12 293:3 advised 256:3 advisory 231:6,9,13,16,22 232:6, 16,19,22,24 affect 111:21 159:17 205:13 affecting 174:7 affiliated 229:20 affirmatively 47:25 affirmed 8:19 age 145:22 281:18 agent 11:22 142:9 167:16 223:7 276:18 agents 136:10 205:5 209:10 agree
--	--	--	--

<p>43:4,7,22,24 44:19,20 45:23 46:10,13 48:8,16 51:10 59:7 118:10,12 179:19,22 181:16 213:14 245:12,21,22 289:24</p> <p>agreed 43:11 45:2,17 46:3,12, 19 47:13 50:4 181:13</p> <p>agreeing 44:5 50:3</p> <p>agreement 230:3,5,14 302:10</p> <p>agreements 230:17 232:20</p> <p>ahead 39:20 160:2 187:19</p> <p>Alfred 38:4</p> <p>aligned 47:16</p> <p>allege 66:4,8</p> <p>alleged 65:23 66:15 67:6 240:21 285:3 299:16 309:23</p> <p>allergy 276:22 277:3,14,22 278:4 279:8,11,13</p> <p>alternative 142:25</p> <p></p> <p>American 234:3</p> <p>amivantamab 220:23 221:2,5,6,7,22 222:9</p> <p>amount 78:23 81:9 116:10</p> <p>analysis 107:17 241:3,4,9 255:14 259:21 297:7 312:23</p>	<p>analyze 145:4</p> <p>analyzed 146:7 243:8</p> <p>angiogenesis 167:2</p> <p>animal 159:9,15</p> <p>anniversary 98:23</p> <p>annotations 17:10,13</p> <p>announced 289:7,17,18,25 291:22</p> <p>announcement 288:22</p> <p>answers 184:11</p> <p>anti-pd-1 292:10 308:7</p> <p>antiangiogenic 167:4</p> <p>antibiotics 212:16</p> <p>antibodies 206:10 209:7,10,14,20, 23,24 223:9 286:24 311:17</p> <p>antibody 140:25 141:16 221:8,9 287:12</p> <p>anticipate 12:7 28:15 169:16 170:2 176:16 311:16</p> <p>anticipated 14:20 80:16 89:17 164:22 168:19 238:11, 21</p> <p>anticipation 15:7,8,9 237:19</p> <p>apologies 86:19 306:16</p> <p>apologize 20:15 75:7 86:13</p> <p>appendix</p>	<p>17:23 30:9,18,23 35:25 36:9,16 37:6,9 38:17,24 39:2,3 40:8 42:24 56:12 77:14,23 83:22 85:17</p> <p>applicable 241:11</p> <p>application 134:12 184:3</p> <p>applied 246:12</p> <p>apply 246:10,19 248:16</p> <p>applying 134:18 238:4 249:4 259:10 296:22</p> <p>appreciated 60:4 69:14</p> <p>approach 124:4</p> <p>approached 63:15</p> <p>approval 84:12,18,25 85:11,21 101:14 104:6,11 107:4, 24 108:2,12 169:6 185:2 187:24 219:21 296:22 312:14 313:3</p> <p>approvals 187:21</p> <p>approve 102:11 178:12,15 187:15</p> <p>approved 100:9,12,15 101:2 102:5 108:6 207:11 208:4 209:4 211:10 215:4 246:7 247:18 314:15</p> <p>approximate 79:16</p> <p>approximately 21:24 22:2 26:13 27:3 79:10 88:12 89:23 92:10,12 225:24 227:9 228:20</p> <p>area 141:25 142:7 294:3</p>	<p>areas 49:15 59:7 285:21</p> <p>argue 122:24</p> <p>argued 253:20 254:4</p> <p>arguer 121:6</p> <p>argues 248:2</p> <p>arguing 121:16</p> <p>argument 241:19</p> <p>arguments 58:19 61:15</p> <p>arm 146:23 175:25 176:2,3 251:19,25 252:9,13,16, 25 253:15 281:10 282:2,22 283:4,10,23 284:8</p> <p>arms 147:6,8,23,24 150:13 153:13,24 175:24 280:25 283:15</p> <p>art 14:20,21 15:11,16,17 23:4,8 26:21 28:4 31:6, 21 34:21,22 44:12 45:15 47:2,9,22 48:25 49:3 57:5,12 58:15,18 60:4 63:17,19,22 64:6, 7,13 65:3,13,16,24 66:8,15,20 67:6,12,16, 19 69:5,8,11 83:9,12 89:16 150:5 163:4,10 164:19 200:8,18 201:3, 5,6,9,23 202:15 238:8, 19 239:6,15,18,23 240:9,10 242:2,3,10,14, 15,18,25 243:4,8,11,13, 17,21 244:17 245:16,23 246:23 266:7 267:11 268:4 277:18 286:15 297:10 310:3 311:2,5, 12,13 312:6,8 313:12</p> <p>article 74:4 119:23 120:14,17 121:15,25 123:24 124:3</p>
--	--	--	--

125:3,8,16,17 175:11 294:20,22,24	assumed 269:12 297:17	157:12,18,22,23 158:9, 21 159:4,19 160:8,23 161:13,21 162:5,17 163:14 165:3,13,18 167:17 168:24 170:6, 15,18 173:22 177:10 179:8 180:19 181:9,19 183:16 184:8,16 187:11 188:5,15 189:25 190:6 192:2,7 193:13 195:14 196:14 197:5 198:9,11, 13,19 199:6 200:4,15, 24 201:12,15,17 202:2, 7,24 203:6,25 206:11 213:3,7,9,13,18 214:16 215:13,15 216:6 219:9, 14 220:2 226:4,12,15 229:10 234:16 237:21 238:12,23 239:10 240:16 241:6 248:24 249:6,18 250:18 251:6 252:5,21 253:10,22 254:6 255:6 258:7,21 259:4,25 260:11,19 261:5,8,11,14,16,24 262:5 263:4,12,17 266:2,21 267:21 268:12 270:6,20 271:11,23 272:7 273:25 274:21 275:10 276:11 277:6,15 278:6,16 280:2,4,13 281:2,12 282:4,15,23 283:13 284:15,23 286:11 289:8,19 290:8, 16,24 291:8,11 293:6 294:19,21 295:17 296:11,14,25 300:11,19 301:9,17 302:2 303:16, 24 304:3,6,11,22 305:6, 9,24 306:8,11,15 307:13,19,22 309:21 314:3,13 315:6,9,18	291:13 304:8 305:11 306:13
articles 17:2,4,6,15 64:22 73:22 82:3,12,14,17 83:14,17, 19 119:2,5 120:3,4	assuming 118:25	author 121:6 124:17 170:23 171:9	
arts 47:21 272:13 298:8	assumption 128:23 281:3	author's 74:7	
ASCO 236:25 237:7,9,10,14	attached 233:16	authored 233:13	
aspect 111:4 134:20	attacks 96:7	authors 120:13 122:16 125:18 166:5	
aspects 136:20 138:7,17 145:11,12 258:11	attend 117:5 237:7,9,10,13	awarded 134:12	
assert 308:11	attendance 92:13 93:8,21 94:7	aware 12:20 13:5 16:6 20:2 73:13 118:15 164:2 185:22,25 208:2,3 209:22 210:14,17 312:7	
assess 242:24 243:3,12 250:6 257:2,11,14 258:12	attended 88:23	awareness 31:9,14 131:13	
assessed 256:24	attending 75:13 76:2 237:16	<hr/> B	
assessing 202:5	attenuated 175:15	B-O-N-E 91:5	
assessment 23:6 49:6,8,13,19,21 50:4,11 59:9 163:5 256:4 259:21,23 260:8, 17	attorney 8:21,22 13:10 16:3,11 20:16,18,25 25:19 27:6 29:7,18 32:24 36:24 37:24 38:9 39:20,24 40:15,21 42:11 43:13, 19 45:19 46:6,21 47:17 48:5,17 49:10,23 52:14 53:4,15 55:8 56:2,8,22 57:23 58:9 59:16 60:10, 18 61:11,21 62:13 63:3, 12 66:3,11 67:9 68:16 69:16,20 70:5 71:2,18 79:25 80:7 81:4 84:7 85:2,13,22 86:16,17 90:16 97:7 101:20 107:7,11 108:3 109:12 110:13 111:23 113:6 114:3,22 116:16 118:18 119:9 120:6 121:12,20 122:7 123:12 124:8 125:8,21,24 126:11 128:10 129:23 131:19 132:2,9,25 133:9 137:25 139:4 143:6 145:15 147:12,17 148:2 149:13,16 150:2,14 151:12 152:13,20 153:16 154:8,17 155:5, 12,23 156:10,15	Bacillus 211:18	
assigning 146:25 148:6		back 14:13 27:11 38:15 53:6 58:4 70:3 110:11 126:9 146:4 158:7,10,18 183:24 205:2 216:4,7 225:12 237:17 251:9 280:11 302:17 315:16	
assignment 12:11 57:2 150:13		background 26:23 87:11 141:7	
assisted 28:11		bacteria 175:14,17,20 211:24	
assists 178:17		ballpark 43:18,22 194:18 233:18	
associate 303:3		base 156:6	
Association 234:3		based 31:11 53:18 61:4 79:6 102:9 109:16 120:9 125:17 129:8 156:7 159:15 162:2 163:4	
assume 264:14 280:14 281:20, 22 282:17 283:8,21 297:16			
		audition 98:9	
			
		authentication 165:20 170:20 226:16	

167:7,9 175:4 176:19 177:6 180:24,25 181:5 194:3,4,16 200:13,21 219:22 247:15 252:12 272:6,24 274:12 275:5 278:9,22 291:24 292:22 293:2,17 296:23 297:7, 8 bases 156:13 basic 96:24 97:2,18 135:8 179:24 180:17 basically 175:13 204:20 basis 159:10 232:25 241:18 BCG 211:15,21,22,23 began 99:13 299:17 begin 53:21 54:10,13 99:9 beginning 31:18 53:22 219:3 begun 12:11 280:23 behalf 231:24 303:8 306:24 behave 203:20 belief 125:17 bell 90:19 289:2 beneficial 142:17 154:24 167:15 benefit 110:4 132:17 133:25 247:5 291:23 benefits 132:15,22 133:6 Benson 17:7 127:3 Bert 235:18	beta 141:2,7 bile 106:21 billed 24:11,16,18,23 25:3 bills 24:22 biological 115:11 biologically 189:20 biomarker 189:14,17,18 190:11, 14,15 191:2,8 192:5 295:6,15,23,24 296:10, 19 297:5 biomarker-related 193:19 biomarkers 189:24 190:4 191:11, 20,23 192:14,21 193:7, 12,17 194:2,7,9 biostatisticians 135:21 biostatistics 134:4 135:15 bispecific 221:9 bit 136:16 blockade 208:15 214:2,24 215:3 223:10 288:20 294:12, 18 blood 166:25 194:6 BMS 286:21 287:2,5,9 288:14 308:12,19 309:9 BMS's 308:7 313:2 board 108:11 231:9,13,16,22 232:6,16,19,22,24	boards 109:22 231:6 Bone 91:3,5 bother 48:2 bottom 228:7 244:14 302:20 Bowl 98:10 brand 101:2,3 break 10:13,14,17 69:18 95:8, 12 96:10 125:23,25 126:2 158:12 213:2,4,5 215:14 280:3 315:7 breaks 158:14 breathe 96:8 Brian 18:19 bringing 52:9 broad 107:9 109:14 116:9 121:14 137:5 156:2 158:23 162:19 181:21 191:14,18 192:15 202:9 205:12 broader 209:18 213:16 broadly 112:12 Bronx 9:4 brought 45:5 BROWN-MARSHALL 8:21,22 25:19 29:7 37:24 38:9 69:20 86:17 125:24 126:11 157:18, 23 158:9 165:3,13 170:6,15 198:11,19 201:15 202:2 213:7,13 215:13 216:6 226:4,12	261:8,14,24 263:4,12 280:4,13 290:24 291:8 294:21 296:14 301:17 302:2 303:16,24 304:11,22 305:6,24 306:8,15 307:22 315:6, 18  build 49:16 butcher 221:4 <hr/> C call 64:19 87:7,19 88:10,11 89:4,20,24 127:21 144:8 252:2 called 29:25 74:4 81:25 82:22 100:25 103:10,12 105:14 106:20 109:22 112:16 117:5,15 134:14 138:9 140:11,12 141:2, 8 171:5 172:22 174:22 205:20 209:3,4,25 220:23 222:13 223:7 266:19 284:9 calling 240:2 299:9 calls 114:12 171:17,20 Calmette-guerin 211:19 camrelizumab 140:11,17,19 Canada 291:22 canakinumab 140:22,24 canceled 237:12 cancer 65:22 82:5,11 87:13,14
---	--	---	--

89:12 97:16,18,21 98:3, 6 99:10,12,17 100:3,18 101:8,9,16 102:3,18 104:14,17,22 105:3,8, 13,16,20 106:2,15,17, 20,21 109:7,11 110:7,9, 10,20 111:3,11,20 112:2,10,12,16,19 113:9,14,16,17,20,22, 23,25 114:8,12,14,17, 20 115:4,17,22 116:2 119:25 127:5 131:6 132:19 133:7 136:12 145:23 146:2 157:7 165:7 166:3,24 168:14 169:8 173:4 174:2,18 175:20 191:24,25 192:16,18,19,23 193:3, 21 194:10 205:7,13 210:19 211:14 215:2,6 220:12,20 221:3,19,22 222:10,12,18,25 223:23,24 224:2,7 231:16,22 246:5,24 247:14,17,19 251:14,21 252:4,11,14,16 253:16 255:17 256:8,17,20,22 257:20,21,23 258:2 259:14 262:19 265:25 266:6,12 267:3,14 268:7,24 270:3,17,18 271:5,9,17,21 272:4,19 273:4,12,17,21,22 275:9,20,21,24 276:8 278:21 279:6 280:16,20 281:8,24 282:18,20 283:9,18,22 284:3,7 286:23 287:3,7,16 288:21 290:22 292:9,12 295:6,8,16 296:9,18,23 297:15 298:15 308:9, 14,22 309:2,5 311:15, 19,24 312:10,19,24 313:18 314:20 315:2,21	car 11:3 CAR-T 209:3 care 95:18,20,23 96:2 112:24 131:5 168:13 272:25 273:7 279:14 carefully 45:4 cares 134:19 135:12 carry 244:24 245:8,17,25 case 9:13,15,18,19 14:11,18 15:6 16:21 19:17 20:5, 8,12 21:6,20 22:22 23:22,25 24:11,16 25:21 26:14,20 28:12, 17 30:20,25 32:12,14 33:6,9,16,25 34:25 35:17 36:6 53:14 54:10 57:2,19 59:6 64:11 73:4,15,20 76:13 77:11 78:5,17 79:9 81:15 86:8 90:4,12,25 91:3,9 122:16 143:13 259:13 300:7 case-related 32:21 cast 88:25 117:13 CAT 274:14 catches 117:19 categories 208:10 categorize 173:14 category 163:18 164:7 206:8 210:25 265:14 276:6 causality 248:9,20 249:12,16 250:4,6,12,16,24 251:5, 24 252:18 253:7,15	254:13,21,25 CD73 223:8 Celecoxib 105:14 cell 139:15 173:5 234:6 cells 113:23 141:9 173:4 205:22 209:3 Center 98:6 292:9 certified 8:6,9,13 25:9,12,16 29:6 38:8 69:21 70:3 95:15 126:3,9 157:20, 25 158:7 165:12 170:14 215:17 216:4 222:3,6 223:16,19 226:11 263:11 280:5,11 291:7 301:24 303:23 305:5 306:7 315:10,16 challenge 14:12 121:24 122:24 challenged 14:23 15:4 challenges 14:15,19 122:4 Champtat 17:7 chance 73:24 change 33:5 79:18 162:11 193:25 214:13 255:5 changed 19:17 34:23 168:14 Chapelle 17:7 74:4,8,18 75:14,20 76:3 characterized 292:3 characters 89:2 charge 179:17	chart 227:7,16 228:13,14,17, 19 229:4 check 127:18 checklist 183:21 189:2 checkpoint 100:4,6,9,11,15 101:7, 12,16 102:2,17,25 103:5 141:3,4 167:22, 25 169:7 173:11 174:3 205:17 206:9,23,24 207:21,25 208:14,16 213:17 214:2,24 215:3 223:10 233:9 288:20 294:12,18 checkpoints 205:17,21 207:7,9,13, 17 chemotherapies 279:11 312:3 chemotherapy 11:22 112:22 140:10 171:7 172:13 176:4,10 271:22 272:16 275:23 276:4,19,21 277:3,13, 20,22 278:5,25 279:18 310:8,13,23 311:20 cherry-picked 47:15 chief 98:5 cholangiocarcinoma 106:21 chose 161:6 circumstance 142:11 161:5 195:3 circumstances 102:15 143:12 154:22 187:14 188:18,21 cite 55:24 56:6,13 60:15 cited 36:12 51:25 52:3,4,17, 25 55:6,12,21 56:12,21 57:21,25 58:7 60:9 62:8
--	---	---	--

70:10 72:7 78:11 287:22 300:3	17:9,14,17	185:8,13,16 186:3 187:8,16,22 189:13 190:25 191:6 195:12, 17,22 196:12 197:2,16 199:2,5,21 200:2,7,12 202:4,20,22 203:4,7,22 204:5,6,23 205:5 207:14 208:5 210:12,15 216:11,15 217:7,10,13, 18,24 218:2,6,13,18,23 219:4,8,22,24 220:11, 13,18 221:18,21 222:9, 13,16 223:22 224:25 225:5,6,11 227:13 230:17,23 245:9 262:22 263:21,25 264:13 265:18,21 266:8,10,15 268:6 269:4,11,25 270:15 271:2,5 272:6, 13 273:23 274:19 276:9,15,25 277:4,19 278:3,20,22 279:3,22, 24 281:11,22,23 282:3 283:11,16,24 286:22 287:2,18 288:7,20 289:13 290:6 292:18 295:9 297:13 302:10 308:19 313:15,20,25 314:5,6,10,21	closely 125:5 closest 264:25 closing 222:22 club 117:6 clues 150:21 coauthors 234:11 cohort 251:12 cohorts 105:2 131:12 coincidentally 174:23 collaborate 107:19 collaborated 106:24 107:2 collaboration 130:16 236:11 colleagues 91:12 collected 146:7 collection 82:2 collective 109:17 133:7 collects 225:9 college 145:24 colon 82:5,10 87:12,13 89:12 105:3,8,13,16,20 111:2 112:12,16,17,19 131:6 145:23 146:2 192:23 215:6 246:24 247:17 287:7 311:15 colony 172:22 173:3
cites 60:16 claim 31:4,19 34:20 42:4 44:11 47:7 49:3 57:10 60:2 63:23 69:12 83:10 89:17 238:16 239:3,14, 22 240:6 258:6,12 285:9,10 claimed 258:19 259:2 285:23 claims 13:17 15:10,18 23:7 67:17 238:5,21 239:8 241:25 242:4,9,13,16, 25 243:4,9,13,16 259:11 310:11,16,20,22 311:5 clarification 14:25 82:7 172:25 261:12 clarified 169:18 clarify 11:18 29:21 32:17 40:3 41:11 70:22 79:4 110:15 125:11 154:10 158:24 171:16 181:11 193:4 216:12 218:12 221:20 224:22 228:22 clarity 275:18 class 74:20,22 classes 97:13,25 classification 174:6 classified 141:20 173:18 Claudin 209:25 CLDN18.2. 209:25 clean	clear 46:25 51:7 254:20 283:6 clear-cut 142:4 clearer 282:8 click 199:19 clinic 273:3 clinical 65:20 73:6 83:23 97:11 99:21 100:10,14 103:2, 4,19,23 104:2,7,8,15,21 105:4,8,10,19,25 106:6, 12,13,23 107:3,6,14,18, 21,24,25 108:21 109:19 112:22 116:5 117:14 121:22,23 122:3,14,17 123:5,7 126:20,24 127:6,8,10,23 128:5,21 129:18 130:8,18,22 131:3,8,10,13,14,16,24 132:6,12,15,24 133:8, 11,13,15,21,24 134:20, 21,23,25 135:11,20 136:6,8,14,18 137:7,16 138:16,17,19,22 139:14,24 140:10,16 141:10,20 142:8 143:9 144:14,18,20 145:6,18 146:10,13,15,17 147:2, 16,23 148:7,14 149:2 150:13 151:6,24 153:13,24 154:4,7,13, 16 155:3,10,15,18,21, 25 156:4,8,14,17,19,22, 25 157:11 158:20 159:5,11,12,13,17,23, 24,25 161:7,12,16,18, 25 162:13,23 163:3,8, 13,17,19 164:4,6,8,11, 13,15,16,22,25 165:25 166:9,12,13,19,22,23 167:10,13,20 168:6,7 171:13 172:4,9 174:9, 21,24 175:23,25 176:6, 7 177:25 178:7,24 179:25 180:15 182:11 183:2,13 184:13,23	clinically 296:4 Clinicaltrials.gov 65:20 126:14,17,25 127:11,19,25 128:8,21 129:13 139:2,7 149:24 151:9,22 178:2,6,14,24 179:7,14,20 180:3,13, 16 181:8,14 182:3,13, 17,25 183:8,11 196:7 197:3,9,14,19,22 198:8 199:3,11,19 251:10 263:16,20 264:8 267:9 269:24 270:9,15,25 271:8 288:22 290:5 299:7 Clinicaltrials.gov. 180:23 198:18 266:16 290:3 clinics 130:17 close 131:11	

colorectal 65:22 99:6 106:2 109:7, 11 110:7,9,10,20 111:19 112:9 115:22 116:2 127:5 133:7 136:11 157:6 192:18,19 193:3,20 194:10 205:7 215:2 220:12,20 221:3, 18,22 222:10,12,18,25 223:22 224:2,7 246:5 247:13 251:14,21 252:3,11,14,16 253:16 266:12 267:3,14 268:7, 24 271:17 272:4,18 273:4,9,11,21,22 274:17 275:9,20 276:7 278:21 279:6 280:16,20 281:8,24 282:18,20 283:9,18,22 284:3,7 286:23 287:3,16,19 288:21 290:22 292:12 293:4 295:8,16 296:8, 18,23 297:15 298:14 308:9,14,21 309:2,5 311:19,24 312:10,18,24 313:18 314:20 315:2, 21,25 Columbia 95:7 96:14 97:14,15 134:4 172:2 230:15 combination 140:9 167:4,11,14 169:12 175:25 240:8 comfortable 47:10 233:19 270:14,22 271:7 comment 125:20 208:6 comments 44:16 120:4,13,19 commercial 98:10,14 commitment 219:5 committee 108:10 109:3 common 119:11 122:4 138:5 145:19 156:13 219:7,12 communicated	254:13 communication 75:19 community 121:9 133:19,20 234:23 companies 84:12,14 219:23 224:15 228:9 229:16 230:18 companies' 220:5 company 12:2 102:10 103:11 185:16 217:3 comparable 262:24 compare 38:25 compared 145:5 171:6 172:12 comparison 285:25 308:10 compendia 109:20 compensated 232:23 compensation 227:22,23 compile 46:14 50:20 compiling 26:24 complementary 117:24 complete 168:15 246:6 247:17 287:11 288:16 308:8,21 completed 224:3 completely 48:9 217:5 complicated 107:13 109:23 111:25 274:3 component 223:9	components 205:24 compound 127:22 comprehensive 59:8 140:8 comprehensiveness 48:23 conceivable 153:8 concerned 102:5 conclude 212:24 concluded 47:6,25 62:18 63:9 297:8 conclusion 31:4,8,11,18 32:7 33:5, 6 34:19,24 42:3,16,18 45:8 47:3,6 49:16 57:8, 17,18 59:21,25 62:18, 20,22 63:8,18 64:4 67:14,21 68:10,11,12, 25 69:11 71:22 72:2 83:8 124:12 166:17 conclusions 28:5 32:3 42:9 53:18 58:20 65:8 66:24 67:22 88:7 conclusively 294:16 concrete 156:23 concurrent 47:24 condition 277:23 310:6 conduct 122:17 134:21 138:16 215:7 288:18 297:6,13, 14 298:9 299:3 conducted 47:19 136:9 137:10 176:24 178:8 269:5 270:2	conducting 136:5 161:18 177:25 202:3 205:5 271:4 288:13 311:18 conference 21:9 87:2 232:11 237:2, 14 conferences 195:23 196:17 confident 271:15 confidential 185:20 307:25 confirm 40:4 41:12 76:19 199:17 confirmed 162:9 confirming 162:14,15,22,24 confirms 155:2 confused 18:8 Congress 117:8 conjunction 81:15 90:4,12 91:3,8 175:22 178:6 183:7 191:12 288:23 connect 310:21 connection 175:2 260:4 considerable 78:23 116:9 consideration 203:24 279:24 284:13 considerations 240:21 241:10,16 284:22 285:3,5,7,12,18, 21 286:9 310:18 considered 29:10,13,17,25 30:4,16 31:24 32:15,20,22 33:4 34:15,17 35:3,15,24
---	---	---	---

41:23,25 42:10,14,15, 21 51:13 52:13,18 54:13,15 61:5 64:17 70:24 77:13,17 78:10 79:21 83:2,18 85:25 86:5 146:8 154:4 208:8 209:7 210:5,9,21 212:13	contrary 58:8 286:19	78:12,13 79:2,10,11,14, 15 80:6,20,21 84:6,13, 16,19,20 85:21 93:4 94:18,19,21,24,25 95:7, 8,21 96:13,14,15 98:7,8 99:7,8,15 101:19 106:7 111:16,17 118:14,23 119:3,4 120:5,8,14 121:11 123:11 130:19, 20 131:25 132:4,8 134:5,6 135:6 136:6,7, 12,13 141:12,21,22 144:15 146:11 147:7,25 149:21 151:7 154:14 155:4,11,22 156:9 161:19,24 162:3,7,16, 19,21,22 166:6,7 167:8, 16,20,23 168:3,4,23 169:2 171:10,11 172:14,15 176:13,14 177:9,22 179:7,25 180:18 181:15 183:15 184:5,6 185:4,20 186:13,14 187:17,22 188:4,13 189:14,15,16, 24 190:5 191:25 193:8, 9,12 197:4,11,20,23,24 198:4,5,8,23,24 209:8 211:3 213:17 227:4,5, 10,11 228:3,4,16,21 229:2,6,7 233:10,11 234:12,13 236:21 237:20 239:9 240:4,12, 13,15 241:5,14,21,22 242:10 245:13 248:4,5, 9,10,23 249:17,20,24 250:13,14 255:18,19 256:22,23,25 257:5,6, 10,24 258:20 263:16, 19,22,23 264:9,10 265:8,9,25 267:11,12, 19 268:19 271:2,3 273:18,19 282:3 284:8, 9,14,22 286:13 287:14, 24 288:9,11,24,25 289:15 290:7,15 293:18,23,24 294:18 295:16 296:4,5,10,19, 24 299:24 300:7,8 304:16 306:21,22 307:12,18,21 308:14, 22,23 309:2,3,20 310:11,12 311:2,3 312:15,16,19 313:5,6, 10,22,23 314:2,12,22,	23 corrected 118:17 119:8 139:17 261:7 correction 19:19 30:12 corrections 119:12,13 correctly 88:22 correlation 291:23 counsel 16:8,14 37:18 65:14 66:2,10 69:16 90:25 91:20,21,24 92:8,19 94:14 125:21 158:11,14 244:23 245:17 256:3 258:16 261:8 280:2 306:14 counselor 111:5 157:15 count 43:15,16 79:4 80:14 counted 43:9 counterargument 58:17,24 counterevidence 60:8 counts 206:6 couple 36:10 86:22 courses 135:15 court 10:6 157:14 165:14 170:7 cover 77:20,21,23,25 covering 95:17 covers 213:15
consist 99:20 consistent 19:7 254:17 construction 248:12,22 249:3 254:15 255:3 construed 248:3 consultant 237:25 consultants 137:3 consulting 20:11 25:25 26:7 227:22 contact 20:23 21:8 75:15 76:4 139:10,16,20,22 195:20 contacted 20:8,10,13 contained 30:5 64:14 67:8 contemplated 313:12 content 152:15 contents 152:18 241:24 context 43:24 78:6 92:2 114:6,7 128:2 134:25 137:20 142:6 160:18 190:18 201:19 206:14,21 208:12 213:21,23 214:4,5,9,20 232:15 continuing 244:15 264:7	contribute 146:5 contributions 229:8 contributor 229:2 contributors 228:15 control 143:24 178:20 convention 54:4 58:5 conventions 53:13 conversation 22:12,17 23:12 86:15, 24 87:9,20 88:5,15,24 89:7 90:24 91:2 conversations 22:6,10 86:7,9 90:11 158:13 coordinator 178:11 copies 17:9,10,12,14 copy 16:21 28:20 37:20 263:2 306:14 corner 70:15 correct 9:21,22 10:2 11:25 13:7 15:22 16:2 18:23 19:20, 21 22:15 24:25 25:16 28:20,21 29:10,13 30:6, 7,10,11,13,14 31:15 32:11 34:16 36:3,4,7,8, 13,23 39:8,9,13,14 40:10,11,14,17,20 41:7 43:5,12,16 45:18 49:8, 22 51:14,15,22,23 58:8 59:3 60:17 61:5,6,10,20 62:12 66:10,13 67:23 69:6 70:25 72:4,21 73:9,10 74:4,6,8,9,15, 16 76:8,16,18,20 77:3,4		

crew 93:23 criteria 107:17 252:24 265:14, 18,20,23,24 266:5,18, 24 267:17 268:11,18 269:7,14 270:5,8,19 271:10 272:11 275:12, 15 276:5,14 278:2 279:4 280:22,23 critical 42:6 44:10 47:5 57:12 60:6 63:20 64:10 78:3 80:22,25 121:2 125:4 129:20 130:3 214:21 240:24 241:11 262:11 265:2 286:2 critically 50:21 82:16 124:5 critique 121:3 critiques 57:18 crosses 142:7 CRS207 171:6 172:12 174:22 175:12,13,21 176:2,3 CRX207 176:9 CSF 173:3 CTLA4 207:7 cultivated 116:19 curable 112:14,15 113:10 cured 273:6,10,13 current 100:23 112:23 278:23  customary 187:7 269:22	CV 186:6 233:16,20 cytokines 211:2,4,5,8,13 <hr/> D daily 116:19 Dansey 294:3,8,15 295:4 296:2 297:17 data 135:25 144:3 146:4 157:10 158:19,25 159:2,3,8,9,15,17 176:19,22 177:5,15,18 180:3 186:22 219:23 220:6 297:10 date 42:6 44:10 47:5 57:12 60:6 63:20 64:10 86:20 92:24,25 103:3 214:21 240:24 241:12,17 246:9 262:11 265:2 286:10, 17,18 289:2,5,24 290:2 297:7 dated 264:24 286:9 288:24 291:17 dates 75:6 104:9 105:12 day 88:16,17,21 196:24 289:17 days 283:20 de 74:8,18 75:14,20 76:3 dealing 108:20 deaminase 223:8 dean 303:3 decade 73:23	December 86:22 decide 37:14 44:25 133:22 145:21 decided 42:20 158:12 decision 111:21 120:22 129:5 161:6 200:2,10,13 201:23 204:13 decisions 108:18 110:21 112:11 123:19 declaration 16:20 17:3,19 18:4,6 19:6,8,11,14,24 24:6 25:23 26:15,17,18,24 27:5,11,14,18,20 28:10, 13,20,23 29:2,8,13,22 30:6 31:19,24 32:10 33:7 36:7,11,12,17,18, 22 37:3,13,21 38:4,13, 24 39:2,3,11,22,23 40:13 41:6,7,8,13 43:3, 8,10,24 44:5,14,16,22 45:4,8,24 46:11 47:11 48:3,9,10,21 49:12,19 50:7,9,12,16,17,19,22, 25 51:4,10,13,17,19,20 52:8 53:3,8,11 54:18,24 55:7,13,20,25 56:7,14, 17 57:16 58:2,5,20,21 60:14,17,24 61:10,17, 19 62:5,12,19 63:9 64:3,14,18 66:17 67:2, 8,13 70:7,13 71:9,11, 12,17,22 72:4,18,23 80:19,23 81:13 83:16 84:6 88:6,8,16,20 90:7 91:16,19 130:14 198:16 205:2 220:8 233:3 237:18,24 240:14,19 243:22 244:3 247:24 249:22 254:14 256:2 262:10 265:7 273:17 284:12,20 299:13,24 300:3 302:5,14 303:13 304:15 305:13 308:5 309:16 declarations 16:23 18:7,24 24:5	26:20 27:2 28:16 37:19 40:6 69:9 72:12 declared 153:10 dedicated 26:23 135:15 deduce 15:18 deficiency 291:25 294:10,16 295:5,14,24 296:3,24 define 20:6 115:12 122:17 208:10 267:10 defined 122:11 143:18 261:22 262:15 definition 113:4 115:16,20 137:6 173:25 255:21,23,25 256:4,14,19,25 257:5,9, 12,16,19 259:16 261:2 262:2,4 definitions 115:2 definitive 124:12,25 143:25 definitively 122:10 174:10 degree 94:18 134:7,10,13 demonstrate 311:6 dent 116:11 depend 122:11 143:10 182:15 195:16 202:10 214:19 236:3 dependent 102:14 depending 26:10 117:18 137:19 163:9 184:20 185:10 201:19 depends
--	---	--	---

101:11 112:2 114:5 120:15,22 121:15 128:25 133:12 150:17 153:18 154:2 159:12 160:18 162:20 163:2, 18,25 173:10 187:13 192:22 193:22 194:13 195:3 200:6,17 206:14 208:12 209:9 213:21 214:3 256:15 274:4	151:1 152:1 153:1 154:1 155:1 156:1 157:1 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1 166:1 167:1 168:1 169:1 170:1 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1 189:1 190:1 191:1 192:1 193:1 194:1 195:1 196:1 197:1 198:1 199:1 200:1 201:1 202:1 203:1 204:1 205:1 206:1 207:1 208:1 209:1 210:1 211:1 212:1 213:1 214:1 215:1 216:1 217:1 218:1 219:1 220:1 221:1 222:1 223:1 224:1 225:1 226:1 227:1 228:1 229:1 230:1 231:1 232:1 233:1 234:1 235:1 236:1 237:1 238:1 239:1 240:1 241:1 242:1 243:1 244:1 245:1 246:1 247:1 248:1 249:1 250:1 251:1 252:1 253:1 254:1 255:1 256:1 257:1 258:1 259:1 260:1 261:1 262:1 263:1 264:1 265:1 266:1 267:1 268:1 269:1 270:1 271:1 272:1 273:1 274:1 275:1 276:1 277:1 278:1 279:1 280:1 281:1 282:1 283:1 284:1 285:1 286:1 287:1 288:1 289:1 290:1 291:1 292:1 293:1 294:1 295:1 296:1 297:1 298:1 299:1 300:1 301:1 302:1 303:1 304:1 305:1 306:1 307:1 308:1 309:1 310:1 311:1 312:1 313:1 314:1 315:1	depositions 18:6,13 24:5 32:13 37:19 69:10 derive 66:24 derived 141:8 describe 69:9 72:20 107:16 113:9 149:9 168:8 202:19 273:18 describes 156:25 171:3 204:18 252:10 describing 47:11 119:19 142:5 165:24 description 61:24 161:11 271:20,25 descriptions 142:3 design 97:12 107:3 134:21 137:4 172:4,6,9 204:22 217:22 218:18,21 designate 307:24 designed 106:13 136:9,15 137:10 138:12 154:12 156:5 168:8 174:12 178:7 204:9 218:2,6,16 269:12 designer 136:23 designing 135:21 136:5 139:25 154:7,16 177:24 203:4, 22 205:4 desire 129:14 detail 25:22 60:21 64:20 78:7 87:21 89:22 205:25 285:19 detailed 212:19 240:22	details 78:8 160:19 163:25 299:15 determination 14:10 110:3 150:20 152:6 200:20 determine 109:4,9 142:15,23 143:22 150:9 163:7 168:8 180:22 183:21 189:3 202:22 203:18 250:15 251:3 259:15,18 275:4 278:9 determined 62:25 63:10 180:4,24 243:9,19 257:7 281:9 282:21 determines 180:9 determining 251:23 252:19 253:8 develop 111:2 146:2 developing 174:17 development 294:5 diagnosed 87:14 276:3 diagnosis 87:12 Diaz 235:16 differ 68:4 113:17 114:19 difference 242:19 differently 124:11 difficult 122:23 136:16 145:10 153:5 204:3 direction 137:4 directly 59:12 160:21
--	---	---	---

director 108:23 disagree 50:25 51:22 56:19 57:22 59:2,15 60:21,23 61:2 62:5 120:13 256:19 257:4,18 308:17 disagreed 44:3 46:5,20 48:4,21 50:13,18 59:5,12,20,23 disagreeing 44:6 disagreement 121:8,18 discover 57:8 142:8 195:4 discovered 204:14 discuss 22:16 23:4 50:8 89:19 109:23 117:4 121:4 171:18 231:21 310:21 discussed 16:14 22:25 87:8,18,22 89:6,22 236:4,7 discusser 121:7 discusses 310:8 discussing 65:4 236:10 289:12 discussion 109:15,24 240:20 discussions 286:4 disease 108:23 127:11 128:18 267:6 268:9 269:2 274:12 275:14 diseases 128:9,13,14 212:10 disorder 276:23 dispute 248:7,19 249:11 254:11,24	DMG 108:24 DNA 291:24 294:10,15 295:5,14 296:2,23 docs 35:2 doctor 95:16,25 158:10 213:3, 10 doctors 269:13 document 27:2 28:25 38:3 123:4 150:18,22,25 151:2,3, 15,19 152:16,19,23 154:3 165:6,17 170:10 226:7,14 233:17 263:7 267:13 268:16 291:3 301:20 302:13 303:19 304:2,10,13,19,25 305:21 306:3,18 documentation 27:10,12 63:25 301:6, 13 documents 16:17,18 17:16 23:4 24:4 26:19 28:12 30:9 32:13 35:14,21,23 37:5, 8,12,15,16 56:12,16 184:25 Dohme 303:9 dollars 26:9 door 295:7 dose 142:10,14,16 160:4 251:22 252:12 253:17 279:16 313:18 doses 176:25 dostarlimab 100:22 draft 27:11,19,21	drafting 26:25 27:4 28:9 80:19, 23 178:13,18 Drew 236:13 driver's 8:18 drug 11:16,17,20,21 100:24 101:19 103:11 105:9,14 128:6 131:25 140:11,12 141:17 142:9,10 163:21,22 166:25 183:14 184:3 188:3,4,8, 11,13,21 212:14 287:8 301:14 308:7,20 drugs 132:7,13 207:10 212:4 duct 106:21 duly 8:19 Dung 72:4 171:10 234:12 302:21 <hr/> E earlier 33:2 52:24 54:22 68:6 78:19 88:21 103:9 114:5 123:17 153:7 159:22 186:8 188:17 205:19 234:11 274:10 308:7 early 86:21 159:14 168:20 212:15 292:23 293:18, 21 294:9 editorial 119:12 120:21,22 editors 120:23 123:18 educating 135:22 educational 117:6 effect	142:17,22 effective 160:3 177:2 214:25 251:22 252:11 253:17 276:18 310:5 311:15,17 effects 102:6 efficacious 167:6 efficacy 143:22 167:12 176:13 292:25 EGFR 209:23 elements 64:19 78:4 Eliezer 9:3 eligibility 265:13 else's 50:7 email 21:2,3 28:6 75:19,25 employed 98:4,21 182:23 enabled 31:3 encompass 181:22 234:20 encompasses 206:9 encompassing 191:19 encounter 74:17,19 encountering 73:19 encouraged 123:20 encouraging 292:22 293:17 encyclopedia 82:24
---	--	--	--

end 25:13 135:2	28:25 38:3 165:6 226:7 303:19 304:25 305:17 306:3	58:14 66:19 73:15 132:7 189:14 191:7 276:15	exclusion 272:11 277:25 280:22
ended 204:14	entry 227:2,16	evidence 56:20 58:7 59:13,21 60:15 61:9,18 62:7,11 63:10 113:23 142:16 251:24 253:6 284:13,21 286:8,17 287:23 294:10 299:17 309:20,23 310:10,13	excuse 131:7 274:9
endpoint 122:18 168:22 176:13 177:16,20,22 202:23	Eric 303:7 304:20	evidenced 286:21	exempt 188:19,23 189:4
engage 100:10 126:23	essence 26:16	evolving 117:12	exercise 206:3,10
engaged 20:5,6 73:14 76:12 77:10 86:7 103:12 118:6 300:6	essential 34:18 62:17 63:8,11 135:7	EX1005 263:7	exhaustive 129:11 272:10
engagement 21:19,25 22:8,14,18	essentially 18:12 82:23 83:4 95:16 108:25 155:16 187:18 189:2 205:21 211:23 221:10 257:20 276:4 312:2	exact 24:2,8,17 35:10 68:2 79:4,5 81:8 86:20 102:19 103:3,7 104:18 136:17 137:8 172:5 183:18 190:18 274:10 282:7	exhibit 17:24 18:2,18 28:23 29:3,9 37:25 38:5,11,12 39:12,17,21,23 40:5,25 41:2,3,4,11 52:8,10,11 53:7 54:10 65:19 66:7, 17 70:14 72:13,17,21, 25 73:2,5,9,12,14,17,19 74:5 76:7,10,15,17,22 77:3,6,8,18 165:4,9,15, 19 170:7,12,17,19 174:9 186:13 198:21 212:20 215:11 226:5,9, 16 263:2,5,8,14 265:12, 23 272:2,6,9,20 273:24 274:20 275:8 276:10 277:5,12 278:2 280:17 282:20 288:2,3,8 289:7, 14 290:7,13,14,20,25 291:4,10,12 292:18 293:13,17,23 297:20 298:2,18 299:7,10 301:18,21 302:17 303:12,17,21 304:4,7, 14,23 305:3,8,10,17,25 306:5,10,12,19 307:5, 15
engaging 76:24	establish 42:3	examination 8:21 13:20,23	exhibits 17:23 30:13 36:11,15, 20,21 37:2 38:18,20 39:7,10,16 40:9,13,20 51:12,25 52:2,4,16,25 53:13,21,22,23 54:9,12, 14,19,20,23 55:6,12,16, 17,21,25 56:7 62:9,23 63:10 70:10,24 71:4,8, 10,13,14,16,20 72:7,15 73:9 300:2 302:4 307:24
England 117:14 120:25 233:22	established 295:6,15,22	examined 8:20	existed 199:15
enhances 206:3	estimate 24:3 25:18	examples 31:25 42:23 43:2 50:15 51:3 52:6 68:7 119:18 153:21 161:3 207:16,19	
enroll 108:7 130:9 145:24 166:13 267:19 269:6 272:14,19 273:2 276:17 280:17 313:14	estimated 25:5,6,15	exceedingly 119:14,23 121:23	
enrolled 146:19 168:17 182:6 251:13,18 264:4 274:19 281:10 282:2,13,19,22 283:3,4,10,23 284:8 297:20	evaluate 14:9 22:22 23:6 30:25 44:4,8 48:14 57:3 60:8, 13 68:7,20,24 76:13 129:21 131:24 133:21 135:20 151:19 152:4 161:5 163:3 190:25 191:16 201:21 203:14 204:10 206:21 269:23 274:25 285:17 292:25	exceptions 116:5	
enrolling 183:12 283:6 298:20	evaluated 44:10 45:3,4,9,11,25 47:22 48:9 62:23 192:13,20 240:24 268:2 285:13,14,18 292:9	exciting 294:9	
enrollment 146:22 271:6 280:23 297:23	evaluating 28:4 47:2 48:2,25 115:14 129:7 130:7 220:24 242:18 246:16 260:22 266:10 286:3 291:23	exclude 259:16 261:3	
entail 97:24	evaluation 27:17 46:17 48:22 57:6	excluded 272:5,22,24 273:23 277:4,10 278:2,9	
enteron 141:14		excludes 262:3 275:8 277:12	
enthusiasm 286:20		excluding 275:15	
entirety 229:18			
entitled			

expanded 132:15 expanding 28:9 expect 152:3 162:23 163:3 164:12 215:8 247:4 272:14,17 273:22 274:18 283:17 288:19 298:11 299:4 expectation 175:18 243:23 244:4,7 245:2,6,10,19 246:2,11, 14,19 247:20 297:16 311:19 312:12 expected 164:20 experience 109:25 178:2,4 219:7 255:17 259:10 262:18, 20,23,24 271:16 experimental 273:3 276:18 expert 9:14,16 11:7,24 12:8,14 15:20 22:21 44:8,24 47:20 48:11 57:3 63:16 77:10 86:10 90:14 109:13,21 237:25 269:22 300:6 expertise 22:23 99:22 207:4 208:25 212:11 experts 57:19 86:7 285:20 explain 60:22 67:21 71:25 explained 53:17 59:19 61:2 explains 244:16 245:15 explicitly 242:22 268:10,18,21 269:6 270:4 277:12 explore 296:9,19 exploring	297:5 express 58:25 expressed 21:8 262:9 extensive 64:15 183:20 extensively 72:22 extent 114:15,18 273:12 eye 44:5 98:17 129:7,20 130:3 <hr/> F fact 9:17 79:6 229:21 251:23,25 252:15,23 272:25 286:21 factor 172:23 173:3 factors 23:4 102:12 129:9,11 146:5 194:17 274:5,11 281:21 facts 121:17,18,25 122:24 123:23 factual 124:6 125:6 faculty 135:23 fail 164:23 177:21 failed 176:12 177:15,19 268:9 271:21 272:15 278:24 308:12,25 fall 312:4 falls 208:9 false 204:21	familiar 13:8,13,16,19 14:2 15:5 38:10 138:18 143:15 165:16,21 170:16,21 179:10 190:10,12 195:6 216:14 220:4 226:14,19 234:22 246:23 291:10, 14 300:22 301:4 304:2 305:7,15 306:10,17 family 111:2,12 fashion 47:14 143:23 FDA 84:5,13,18,24 85:11,20 100:9,11,12,15 101:14 139:22 169:6 179:5,10, 13,16 180:4 183:20 184:5,7,15,25 185:19, 23 186:21,24 187:15,18 188:25 189:7,10 208:4 215:3 219:21 220:5 296:22 312:14 313:3 314:15,25 feasibility 108:16 featured 98:13 features 101:13 192:23 <div style="background-color: black; width: 100px; height: 30px;"></div> federal 134:16 183:4 225:9 federally 134:11 feel 66:22 67:20 235:4 257:16 fees 227:23 fellows 135:23 fellowship 95:6 96:12 97:10,11,20, 23 99:14,24 102:23 103:6,22 134:15 fellowships	99:19 felt 22:23 31:16 45:6 286:16 female 20:25 field 118:16,20 135:10 191:19 214:11 255:16 256:6 262:17 fields 146:9 181:3 figure 137:23 151:10 315:7 filed 33:9,13,24 filing 12:8 28:15 85:7 filings 35:6,8,11,13 84:4,10,24 85:10,20 fill 311:10 fills 183:21 final 105:11 find 122:24 130:24 142:9 240:21 finding 49:2 121:3 239:13,22 240:3 241:15 251:2,9 findings 47:13 49:15 61:25 62:3 160:18 fine 280:4 fingers 272:2 finish 229:7 finished 168:12 firm
---	--	--	--

12:3 20:17,19 21:5,10 22:7,13 first-line 166:4 169:7 fit 182:5 276:5 279:4 fits 134:2 flavors 138:23 flawed 240:22 241:2,10,17 285:25 flip 302:16 focus 26:25 100:2 130:15 focused 99:5,24 205:4 focuses 166:25 focusing 99:16 folks 236:6 follow 298:12 313:16 follow-up 89:8 290:5,10 form 13:10 16:3,11 27:6 29:18 32:24 36:24 39:25 40:15,21 42:12 43:13,19 45:19 46:6,21 47:17 48:5,18 49:10,23 53:4,15 55:8 56:2,8,22 57:23 58:9 59:16 60:10, 18 61:11,21 62:13 63:3, 12 66:4,11 67:9 68:16 71:2,18 80:2,9 81:4 84:7 85:2,13,22 90:16 97:7 101:20 107:7,11 108:3 109:12 110:13 111:23 113:6 114:3,22 116:16 118:18 119:9 120:6 121:12,20 122:7 123:12 124:8 128:10 129:23 131:19 132:2,9,	25 133:9 138:2 139:4 143:6 145:2,15 147:12, 17 148:2 149:17 150:2, 14 151:12 152:13,20 153:16 154:8,17 155:5, 12,23 156:10,15 158:21 159:19 160:8,23 161:13,21 162:5,17 163:14 167:17 168:24 173:22 177:10 179:8 180:19 181:19 183:16 184:8,16 187:11 188:5, 16 189:25 190:6 192:2 193:13 195:14 196:14 197:5 198:13 199:6 200:4,15,24 201:18 202:7,24 203:25 206:11 213:18 214:16 219:9 220:2 229:10 234:16 237:21 238:12,23 239:10 240:16 241:6,18 248:24 249:6,18 250:19 251:6 252:5,21 253:10, 22 254:6 255:6 258:7, 21 259:4,25 260:19 261:18 262:5 263:17 266:2,21 267:22 268:13 270:6,20 271:11 272:7 273:25 274:21 275:10 276:11 277:6,15 278:6, 16 281:12 282:4,23 283:13 284:15,23 286:11 289:8,21 290:8, 16 292:2 293:7 295:17 296:12,25 300:13,19 301:9 307:13,19 309:21 314:3,14 formal 21:18 format 120:10 forming 34:18 41:20 66:16 248:17 249:21 250:5 formulate 68:21 71:11 formulating 30:4 36:22 38:21 41:6, 18 42:15 49:5 67:7 71:8 83:15 84:5 198:2 304:15 forward	169:12 296:7,16 found 37:17 63:21 67:16 83:4 117:3 195:17 238:5,15 239:2 244:25 245:18,25 foundation 165:20 170:20 226:17 291:13 304:8 305:11 306:13 fourth 93:25 94:2 framework 152:4,9 frequency 219:15 frequently 126:18 135:19 219:13 Friday 88:21 92:9 front 16:17 35:6,11 48:12 150:6,19 151:15 152:24 263:3 265:10 full 8:25 28:10 292:21 function 292:3 fund 225:18 fundamental 111:6 121:24 fundamentally 240:22 241:16 funded 134:11 300:10 funding 108:15 218:22,25 219:2,6 224:15,20 225:21 226:23 227:10 228:9,15,21,22 229:22 230:2,6,12 231:2 299:17 300:17 301:14 funds 230:2 232:3,7,8	G gaining 182:10 gastric 99:6 101:8 106:14 166:3 169:8 231:16,22 gastro 168:13 Gastroesophageal 165:7 Gastrointestinal 165:7 gather 144:13 gathered 144:12 gave 22:20 66:10 83:21 88:9 176:24 general 22:20 118:10 125:15 138:11 139:6 144:16 145:10 152:3 156:19 157:9 163:12 164:7 189:15 190:20 192:6,8 194:13 202:19 227:16, 20,21 228:2 234:25 275:19 generality 143:9 generally 11:13,20 64:7 81:24 109:18 113:8 115:13,19 116:4 137:14 143:4 149:4 151:23 155:17,20 156:12 159:23 160:6 173:16 184:14 185:7 194:21 204:18 212:8,17 227:21 232:23 235:5 275:23 277:18 generation 194:5,20 genes 111:12 194:22,23 genetic 110:25 292:2
--	--	--	---

genetics 111:5 genomic 296:9,19 297:5 genomics 97:17,19,21 germline 111:7,15,17 Germosen 8:9 GI 98:5 99:5,17,25 100:3, 18 101:16 102:3,18 104:17 106:7,9 108:23 109:2 115:19 119:25 136:12 192:12,16 205:7 207:6,11 208:25 209:5, 17 210:11,16 211:11 212:8 233:8,10 280:15 give 10:21,24 23:6 27:8 45:13 49:12 58:16,24 64:23 65:18 79:5 87:4 103:16 127:14 129:12 130:4 131:15 133:17 136:17 137:7,20 143:8 145:17 151:16,17 163:24 187:18 191:17 204:3 235:15 236:2 257:21 276:23 279:15, 18 giving 44:21 101:11 122:19 182:12 208:19 goal 45:12,13 134:15 Goldberg 16:24 70:7,10,17 71:12, 16 78:12 310:7,17 311:25 Goldberg's 70:13 71:7 309:19 good 8:8,23,24 10:19 91:15 130:4,6 213:5 government 226:22 229:6,17 governs 230:6	graduate-level 97:13,25 graduated 94:20 grant 134:11,12,16 granulocyte 172:22 gray 141:25 142:7 great 69:19 greater 312:5 greatly 163:9 185:10 group 14:6 93:10 94:9 108:24 116:25 117:4 143:24 145:21 164:15 171:17 176:9 274:4,7,16 315:3, 22 grow 273:12 grows 275:22 guess 48:13 133:20 139:9 guideline 278:23 guidelines 109:21 274:6 276:14 278:23 279:5,23 GVAX 171:5 172:11,16,17 173:7,14 175:22 176:2, 9 <hr/> H halfway 299:14 Hamid 17:8 77:2,6,8 handed 165:15	handing 170:7 happen 98:16 139:18 219:13 231:12 happened 195:18 286:5 happening 146:6 happy 153:21 285:19 hard 27:8 129:12 137:7 143:8 152:23 153:19 156:20 160:14 192:9 194:12 202:18 231:10 Hastings 20:17,19 21:5,10 22:7, 13 87:4 89:3 91:12 92:16 93:11,24 94:10 head 51:2 101:4 105:12 188:25 294:3 headed 170:10 header 29:24 241:23 heading 228:14 headline 117:18 228:8 health 98:7,21 110:2 heard 195:9 hearing 74:23 hearsay 165:20 170:20 226:17 291:13 304:8 305:11 306:13 Heart 96:7 heavily 292:11	heavy 135:10 helpful 42:2 190:18 helping 137:4 hematology 95:6 Hepatobilia 165:8 HHS 139:9 170:10 high 14:4 107:10 119:15 315:3,22 higher 143:2 highly 118:9,13 120:8 hoc 232:25 Hold 149:16 268:12 300:12 holder 13:2 184:10 185:7,12 186:2,11,15,20 187:4,9 188:2,4 189:7 holders 185:18 holding 186:12 home 116:23 honest 126:23 196:20 honoraria 232:13,21 hook 139:16 hope 175:18 hoping 98:14 Hopkins 33:24 34:14 54:9,19
--	---	---	--

62:9,24 174:17 177:8 224:8 289:6,17,20 290:14 292:8 293:22 303:3	identical 260:25	100:4,6,9,15 101:7,12, 15,25 102:17,25 103:5, 9 167:22,25 169:7 173:13 174:3,4,7 175:19 205:13,21,24 206:4,22,24 208:16,19, 21 209:11 210:8,20,25 211:15,25 212:2,7 213:16 221:15 223:10	implicit 242:23
Hopkins' 54:14 90:8	Identification 29:4 38:6 165:10 170:12 226:9 263:9 291:5 301:22 303:21 305:3 306:5	immunohistochemist ry 194:3	implies 265:19
hospital 94:24 95:16 225:18	identified 45:16 46:2,18 61:10,19 65:6,24 66:7,9,15,20 67:7 71:16 82:14 83:2, 14,20,22,25 90:15 131:18 142:15 144:21 154:23 161:9,10 191:12	immunology 96:19,23,24 97:3,6,13, 22 98:2,3	imply 114:9
hospitalist 95:14 96:6	identify 37:8 46:3,19 48:15 50:11,24 51:5,9 65:2,12 67:3 68:14 82:12 139:2, 7 193:16 269:25	immunomodulators 210:23	important 26:19 42:2,17 45:7 56:18 58:4 59:5 116:21 130:21 134:22 179:20 180:15,17 181:14 286:14 294:11
hour 10:13 25:24 26:9 69:17 125:22 213:6 280:3	identifying 116:14 127:16 294:11, 17	immunomodulatory 212:4,14,18	improved 157:6 176:11
hourly 25:20 26:6	II 141:24 142:12,13,18,21 143:3,5,21 144:11 156:25 159:23 160:3,5 165:25 292:7,24 293:11 296:7,17	immunoreponse 172:19 173:5	inappropriate 139:19
hours 23:24 24:3,4,9,10,15, 19,23 25:4,13,14 26:12 27:4,9 78:14,16,19,20, 22 79:2,9,10,12,14 80:5,15,16,17 81:2,11 92:12 93:7,20 94:6	IIA 177:9	immunotherapies 136:10 140:3,5 173:21 205:6,10 210:21 213:25 222:24 223:3,11,21	incidence 145:23
human 178:24	IIB 143:16,20 144:4,7,9 171:4 176:23	immunotherapy 82:11 87:16 89:11 102:6,7 103:11 112:20, 25 140:14,17,20,23 141:13 166:2 167:3,5 173:8,11,15,19 174:2 206:7,8,25 208:8 209:8, 12 210:5,10,24 212:5 213:15 214:7,11,15 215:10 221:12 247:19 291:24 311:14	include 42:21 51:21 52:12,16, 19,25 56:11,15 57:17 61:8 64:21 71:23 139:20,21 143:23 179:24 180:22 181:4 182:18 211:2,5 220:6 270:18 279:22,24
hypotheses 212:20	III 141:24 142:19,21 143:4,12 144:2 160:6, 16,22	impact 119:15 204:7	included 31:5,20 32:5 34:21 41:22,24 42:5,16 45:6 47:8 53:2,10 55:6,19 57:11,15 58:3 66:21,23 71:20 72:16 79:20 82:18 105:5 139:15 140:8 180:9 199:4 233:16 255:2 265:21 277:10 285:8 290:20 305:12
hypothesis 155:2,20 162:2,3,9,14, 16,20,24 167:14,19	IL-1 141:2	impacts 111:9	includes 29:9 30:8 41:4 64:16 80:18 252:3
hypothesized 174:25 176:11	IL-I 141:7	impetus 154:15,20	including 15:25 16:23 26:20 44:13 48:25 50:2 81:11 83:11 87:16 99:20 123:3 136:10 137:5 205:6 220:14 222:12 230:19,20 233:9 239:16,24 274:11 297:11
hypothetical 281:6,7,14,17	illness 175:16	implicate 147:15	
I	illuminating 281:14	implication 121:5	
ICI 167:15,21	imagine 138:24	implications 121:10 124:21,23	
ICI-NAIVE 168:22 169:3,10	immune		
idea 217:2			
ideally 131:5			
ideas 236:4			

inclusion 107:17 252:24 265:14, 18,19,22,24 266:5,18, 24 267:16 268:11,18 269:7,14 270:4,8,18 271:9 272:10 277:25 280:21	individual 102:14,15 132:21 160:19 227:24	initial 20:22 21:7 28:2,3 61:24	inter 15:21
incorporate 129:4 204:13 205:16	INDS 184:4 187:2 189:5	initially 275:21 289:25	interest 21:8 117:19 118:7 194:23 215:5
incorrect 59:22 162:8	induce 173:5	initiate 292:24	interested 127:22 128:15 195:12 271:17
incorrectly 293:7 296:12	infections 96:7	initiated 216:10,15,24 217:9,13, 18,24 218:3,6,13,18,23 219:3,8,20,24 302:9	Interesting 206:5
increase 130:22 134:16	infinite 148:24	initiating 296:7,16	interfere 10:24
increased 130:18 145:23	influence 112:10	initiation 123:7 297:25 298:5	interferons 211:6
increasing 131:13,14 132:5,23 133:8	inform 16:8 253:19 254:3	inject 175:14	interleukins 211:6
incredibly 121:14 128:24 156:2 158:23	information 26:23 30:24 41:25 45:12 57:4,7 62:16 63:7,17,21 64:8 65:10 69:10 80:13 87:11 88:10 95:10 128:3,5 129:3,4 139:10 144:12, 13 150:6,8 151:23 152:17,24 156:5 163:10,19,24 164:18 179:21,24 180:12,15,18 181:4,5,7,15,17 182:9, 11,13 189:21 193:24 195:21 200:19,22 201:10,22 203:19,20 225:9 233:15 253:13 269:17 277:8 287:10 288:18	input 218:20	intermediate 143:15
incurable 112:14 113:13,17,21 114:13,16,19 266:11 269:2	informing 189:7	insert 85:5,9,16,19	internal 94:23 95:15,18 96:3,4
IND 183:15,19,22,25 184:2, 7,10,15,22 185:7,12,17, 19,23 186:2,11,15,16, 20,24 187:4,9,15,20 188:2,3,7,12,13,19,20, 23 189:4,7,9,11	infrastructure 225:5	inspection 8:11	internist 95:21 96:11
independent 32:2 44:7 45:14 47:20 57:3 58:13 63:16 65:13, 24 66:9,18 68:9,21,24 69:4,7 95:22 116:22	inhibition 167:15 169:7	instability 292:2	interpret 149:12 249:23 269:20
independently 58:18 65:7 83:25 96:3 155:9 246:15	inhibitor 101:16 102:2 141:3,4 167:25 222:14,15 246:6	instance 102:4 279:9	interpretation 121:17 122:5
indicating 24:14 160:12 186:9	inhibitors 100:4,7,9,11,16 101:7, 12 102:17 103:5 167:22 206:9,23,24 207:17,21, 25 212:13 213:17 220:14 223:8 233:9	instances 43:10 44:17 45:17,22	interpreted 150:23 250:10
indication 101:13,18 143:11 246:8		institution 108:6 110:8 138:5 166:15 186:18 187:24 230:9,14	interrupted 25:9 222:3 223:16
indications 247:19 314:16		institutional 108:11	intervention 190:22 283:15
		institutions 108:13	intolerable 102:7
		instruction 96:22 97:5	inventor 12:18 13:6 260:23 261:23
		insurance 102:9,10	inventors 14:7 235:14 259:17,22 260:5,7,16 261:4,5,6 262:3
		intent 143:19	investigate 298:16,19
			investigation 185:6 188:8,10,12,23

Investigational 184:3 investigator 103:13 107:2,23 109:2 136:22 137:13,16,17,23 138:9,14,20 139:3,11, 18,23 140:13,21 166:15,17 171:25 180:21 181:4 204:4 216:10,15,23 217:2,9, 13,17,23 218:3,5,13,14, 18,23 219:3,8,20,24 220:11 222:21 302:9,22 investigators 110:2 161:6 179:6 199:22 216:24 218:15 224:8,11 225:11 involve 109:24 136:9 140:6 146:24 189:13 222:17, 24 224:8 231:18 257:24 involved 23:11,21 103:18,22 104:2,8,14,19,21,25 105:9,13,18,24 106:5, 18 107:5,23,25 108:19 122:18 136:5 138:15 140:2 169:19 172:3,8 175:8 178:13 184:21 190:24 191:3,7 217:18 218:7,10,17,21 220:19 222:11,17,19 223:5,12, 24 231:21 involves 107:18 108:8 141:7 183:13 involving 106:6 141:11 220:12,14 221:18 ipilimumab 100:21 IPR 15:21,24 33:12 39:16 IPR2024-00240 8:1 9:1 10:1 11:1 12:1 13:1 14:1 15:1 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1 29:1 30:1 31:1 32:1 33:1 34:1 35:1 36:1	37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1 115:1 116:1 117:1 118:1 119:1 120:1 121:1 122:1 123:1 124:1 125:1 126:1 127:1 128:1 129:1 130:1 131:1 132:1 133:1 134:1 135:1 136:1 137:1 138:1 139:1 140:1 141:1 142:1 143:1 144:1 145:1 146:1 147:1 148:1 149:1 150:1 151:1 152:1 153:1 154:1 155:1 156:1 157:1 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1 166:1 167:1 168:1 169:1 170:1 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1 189:1 190:1 191:1 192:1 193:1 194:1 195:1 196:1 197:1 198:1 199:1 200:1 201:1 202:1 203:1 204:1 205:1 206:1 207:1 208:1 209:1 210:1 211:1 212:1 213:1 214:1 215:1 216:1 217:1	218:1 219:1 220:1 221:1 222:1 223:1 224:1 225:1 226:1 227:1 228:1 229:1 230:1 231:1 232:1 233:1 234:1 235:1 236:1 237:1 238:1 239:1 240:1 241:1 242:1 243:1 244:1 245:1 246:1 247:1 248:1 249:1 250:1 251:1 252:1 253:1 254:1 255:1 256:1 257:1 258:1 259:1 260:1 261:1 262:1 263:1 264:1 265:1 266:1 267:1 268:1 269:1 270:1 271:1 272:1 273:1 274:1 275:1 276:1 277:1 278:1 279:1 280:1 281:1 282:1 283:1 284:1 285:1 286:1 287:1 288:1 289:1 290:1 291:1 292:1 293:1 294:1 295:1 296:1 297:1 298:1 299:1 300:1 301:1 302:1 303:1 304:1 305:1 306:1 307:1 308:1 309:1 310:1 311:1 312:1 313:1 314:1 315:1 IRB 108:11 187:21,24 irrelevant 261:20 issued 12:23 14:17,19 issues 44:18 96:3,5 102:9 item 50:2 items 48:21 51:9 <hr/> J January 86:21 308:10 Jennifer	18:16 JHU 240:21 248:2 JHU's 256:19,24 257:11,16,19 284:13,21 285:3,20 JHU2061 291:3 JHU2131 301:20 John 91:3,4 Johns 33:24 34:13 54:9,14,19 62:9,24 90:8 177:7 224:8 290:14 292:8 293:22 303:2 joined 169:25 176:15 journal 117:6,13,15,23,25 119:2,5,14,19 120:2,3, 9,14,16,23,25 123:22 125:18 233:22 234:3,6 journals 116:22 117:10,17,20 118:5,9,13,22 120:16, 18,20 123:16,18,25 judge 68:20 judged 155:9 judgment 151:17 July 22:4,8 42:7 44:10 47:5, 23 57:12 63:21 64:11 69:15 82:20 83:9 99:11 214:21 238:3 239:6,17, 25 240:10,25 241:12,17 242:18 243:8,17 244:17,23 245:17,24 251:12 265:2 268:4 278:23 286:3,7,25 287:17 288:6 297:8,21 298:18 299:20 307:17 311:22 312:7,13,17 313:2,8 314:11,16,21 315:20
--	--	--	--

June 22:4,8 198:6,17 263:15 264:24 265:7 junior 135:23 justify 42:17 67:14,21 71:25 83:7 310:19 <hr/> <p style="text-align: center;">K</p> Ken 235:22 key 64:19 65:2 117:7 137:3 Keynote 288:2 292:24 293:12 Keytruda 84:18,25 85:5,12,21 109:6,10 111:22 115:22 116:2 231:19 292:10 293:2 295:8,16,22,25 296:8,17 312:13,18,24 313:8 314:10,19 keywords 82:4,11 kilogram 283:20 284:5 Kimmel 292:9 kind 143:23 184:20 Kinzler 235:22 knew 177:5 246:23 knowing 146:20 283:3 knowledge 82:24 99:22 109:17 127:9 135:8,17 156:6 247:16 259:9 262:21 269:19 288:10 KRAS 222:13,15	<hr/> <p style="text-align: center;">L</p> la 74:8,18 75:14,20 76:3 lab 74:24 label 101:18 149:25 labeled 149:21 307:5 labels 143:14 Laboratories 294:5 laboratory 75:21,22 LAG-3 207:19 laid 46:24 83:18 Lancet 234:8 Langone 98:7,21 large 27:15 126:22 132:23 133:4,20 136:19 143:25 194:16,19 larger 117:7 143:5,13 largest 228:25 late 86:21 294:4 late-breaking 237:5 law 12:3 20:17,19 21:5,10 22:7,13 layers 108:14 Le 16:24 72:4,7,16 171:10, 12,15,20 172:8,10 234:12 299:15 302:4,21	Le's 72:11 234:15,22 235:9 237:13 299:23 300:10, 18 301:8,11 305:13 lead 12:3 132:12 leaders 117:8 137:3 leading 281:3 learn 128:3 135:5 156:5 195:13 learning 271:18 leave 115:13 lecture 74:23,25 75:14 76:2 led 13:4 130:16 292:8 293:22 308:8 leeway 181:3 left 166:15 186:17 legal 11:7 26:2 28:8 91:11 lengthy 87:20 88:12 Lenvatinib 165:25 letter 21:19,25 22:8,14,18 55:2 120:17 letters 120:4,12,19 121:2 level 14:4 107:10 125:17 143:2 157:9 286:5 levels 143:15 license 8:10,19 life 279:2 life-threatening 277:23 light 45:12,14 57:4 124:13 255:9 269:20 likelihood 129:15 163:7 204:18 limit 128:7 148:16 limitation 31:5,20 34:20 42:4 44:11 47:7 49:3 57:10 60:2 63:23 69:12 83:10 144:10 238:17 239:3,14 240:7 279:17 limited 150:12 195:2 267:10 313:21 limits 142:5 lines 173:5 266:13,14 273:5 275:16 Lipson 308:10 list 29:9,11,12,15,16 30:3,8 31:13,23 33:4 34:13,14 35:3,16 36:11 38:18 42:21 46:14 50:21 52:13,18 54:13 56:16 59:8 61:5 64:15 65:25 66:9,21 69:5 70:23 72:17 82:14 100:19 129:11 140:8 189:2 209:21,22 264:7 269:14 271:9 272:10 listed 30:9,15,17,21 31:16 32:14,20,22 33:3 35:2, 24 37:6,9 51:12 54:15 61:4 77:13,17 78:10 79:20 85:25 86:4 101:18 212:15 listing 46:12,16 65:19 116:19 lists 307:9
--	--	--

literature 81:14,16,23 83:2,14,20 84:2 109:24 116:7,8,10, 15,21 122:2 123:10,16 135:25 163:11 196:3 206:18 live 175:13,17 211:23 liver 106:20 local 114:14,15,18 locally 114:19 115:3,8,12,16 273:12,17,22 274:7 275:2,9,21 293:3 located 17:21 Lonberg 16:23 51:14,21,25 52:3, 5,17,21 53:2,10 54:23 55:5,22 56:20 57:21 58:7 59:8,10,13,20,22 60:9,16,21 61:7,9,19 62:4,8,25 78:12 308:6 Lonberg's 51:16,18 52:7 54:18 55:16 58:19 59:2 61:15 long 88:12 89:23 92:10 93:5, 18 94:4 98:20 109:15 122:22 189:2 300:25 long-felt 309:20,25 310:2 311:6, 7 looked 32:3,4 37:11 46:17 52:10 58:12,17 63:16 70:22 78:3,11 164:3 243:10,15 265:4 268:5 loss 292:3 lot 98:15 108:17 120:22 135:11 141:25 215:5 230:16 274:4 286:19 311:25 loudly 10:8	Luis 235:15 lunch 213:4,6 215:16 luncheon 215:20 Lynch 111:15,18 <hr/> M M.D. 8:1,17 9:1 10:1 11:1 12:1 13:1 14:1 15:1 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1 29:1,3 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1,4 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1 115:1 116:1 117:1 118:1 119:1 120:1 121:1 122:1 123:1 124:1 125:1 126:1 127:1 128:1 129:1 130:1 131:1 132:1 133:1 134:1 135:1 136:1 137:1 138:1 139:1 140:1 141:1 142:1 143:1 144:1 145:1 146:1 147:1 148:1 149:1 150:1 151:1 152:1 153:1	154:1 155:1 156:1 157:1 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1 166:1 167:1 168:1 169:1 170:1 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1 189:1 190:1 191:1 192:1 193:1 194:1 195:1 196:1 197:1 198:1 199:1 200:1 201:1 202:1 203:1 204:1 205:1 206:1 207:1 208:1 209:1 210:1 211:1 212:1 213:1 214:1 215:1 216:1 217:1 218:1 219:1 220:1 221:1 222:1 223:1 224:1 225:1 226:1 227:1 228:1 229:1 230:1 231:1 232:1 233:1 234:1 235:1 236:1 237:1 238:1 239:1 240:1 241:1 242:1 243:1 244:1 245:1 246:1 247:1 248:1 249:1 250:1 251:1 252:1 253:1 254:1 255:1 256:1 257:1 258:1 259:1 260:1 261:1 262:1 263:1 264:1 265:1 266:1 267:1 268:1 269:1 270:1 271:1 272:1 273:1 274:1 275:1 276:1 277:1 278:1 279:1 280:1 281:1 282:1 283:1 284:1 285:1 286:1 287:1 288:1 289:1 290:1 291:1 292:1 293:1 294:1 295:1 296:1 297:1 298:1 299:1 300:1 301:1 302:1,21 303:1,8 304:1 305:1 306:1,24 307:1 308:1 309:1 310:1 311:1 312:1 313:1 314:1 315:1	M.P.H. 38:5 macrophage 172:22 made 14:16 20:3 49:8,21 50:3,10 59:25 73:13 88:8 103:11 178:5 185:19 236:25 287:8 312:18 maintain 39:16 maintenance 103:10 majority 26:22 27:16 112:17 140:4 make 10:8 14:9 19:18,23 20:2 31:7,10 32:7 46:12,15 53:18 56:17 62:17 63:8 65:9 85:4 110:3 116:11 123:6,18 129:5 130:10 134:24 138:25 143:18 150:19 152:5 156:23 161:6 167:2 178:10,20 197:21 200:12,19 201:23 297:22 makes 141:15 185:23 making 57:16 110:20 112:11 120:23 163:5 179:6,13 200:2,10 228:9 260:5 male 20:25 malpractice 9:13 management 108:24 manuscript 122:23 196:18 manuscripts 32:3,9 March 98:22,24 99:3 mark
---	--	--	--

165:4 170:8 226:5 263:4 290:25 301:18 303:17 304:23 305:25	108:25 113:12,21 196:11 216:21 242:15 250:25 253:2,20 254:4	104:6 215:4	127:4 171:8 172:14 215:2 220:12,20 221:2, 18,21 222:10,12,18,25 223:22,25 224:7 266:11 267:6 270:2,17,18 271:5,9 272:5 273:4 274:8 275:25 276:6 278:21 293:3 315:2,20
marked 29:3 38:5 165:9 170:11 226:9 263:8 291:4 301:21 303:20 305:2 306:4	meant 140:21 142:8 172:19 173:12 210:8	members 21:10,11 22:12	method 23:3 131:16 143:11 146:25 147:15 200:14 247:3,8,14 256:21 257:14,21,22 258:5,19 259:2,13
marker 110:24 195:7	measurable 274:12 275:13	memory 33:18	methods 131:17,22 147:7,8,24 148:6 244:24 245:18,25 259:10 285:11,23 298:12 313:17
master's 134:4	measured 274:14	memos 32:13	microsatellite 82:4,10 157:2 204:11
matches 123:6	measurements 274:15	mention 19:20	middle 169:20 227:7
material 31:11 42:6	medical 9:13 74:14 75:5,10 82:24 94:17 96:21,25 97:3,4,19 99:5 116:7,8, 10,14 118:23 121:9 122:2,5 123:10,15 126:13 135:6,9,17 234:3 255:15 256:6,16 262:17 315:4,22	mentioned 15:7,13 103:8 107:22 117:9 119:22 123:17 131:3 136:18 141:10 151:4 153:7 206:22 209:6 236:19 285:15 287:3,5,20	milligrams 283:20 284:4
materials 29:9,12,17,25 30:4,15, 16,17,18,21,23 31:22, 24 32:15,20,21,22 33:4 34:15,17 35:3,15,24 41:5,9,12,23,25 42:10, 14,15,19,21 51:12 52:13,18,19 54:13,15 61:4,5,7 64:17 70:24 77:13,17 78:10 79:21 82:25 83:18 85:25 86:5 115:3	medication 11:16 100:23 102:21 110:4 142:23,24,25 154:23 174:22,23 220:23 222:13 276:22 279:15	mentioning 226:22	million 224:14,20 225:8,20,25 227:9 228:20 229:22
matter 9:10 11:7,10,12,15,24 12:5,6,9,14,17 26:3 49:14 66:19	medications 10:23 101:23 102:25 128:16 279:13	Merck 28:11 33:9 35:20,22 53:21,23 66:21 73:3,14 84:4,18,24 85:11,20 86:8 89:4 90:15 91:11 93:12,24 94:10 218:8, 10,17,20,22 225:21 226:2 228:16,21,23,25 229:23 230:2,5,7,12,19, 20,23 231:3,7,9,17,20, 21,24 232:4,9,14 248:11 253:19 254:3,14 263:7 287:18,21,22 288:7,12,23 289:16 290:2,5,12,19 291:3,17, 20 292:23 294:5 297:19 300:7,9,16,23 301:5,13 303:8 304:20 306:24 312:17 314:25	mind 44:18,23 81:8 119:25
matters 23:21 28:16 98:2	medicine 94:23 95:15,18 96:3,5 117:15 120:25 233:22	Merck's 33:15 65:14 66:2,10 81:20 256:13 259:15 292:9 298:17 299:17 301:5 305:20	mindset 80:23
maximum 142:10 160:2	Medimmune 103:12	met 91:21 92:5 109:5 202:23 276:13	mine 41:14
MD4736 100:25	meet 91:20,23 93:5,18 94:13 168:21 176:12 177:15, 19,21 203:10,13,17 257:17 280:22	met all 275:14	minimum 108:7,8
MDSCS 141:8	meeting 92:7,11,14,18,21 93:9, 16,22,25 94:2,5,8	metastatic 112:13 113:2,5,8,16,20, 21,25 114:7,8,13,17	minute 100:14
meaning 77:25 87:23 95:17 112:13 115:6 129:11 134:11 248:16 249:4,10 250:11 254:15	meetings 116:25 117:6,7,8		minutes 88:13 90:2
meaningful 295:10 296:4	meets 206:19 280:21		mismatch 291:24 293:2 294:10,16 295:5,14,23 296:3,23
means	melanoma		missed 204:21
			misspoke 140:19

mistake 18:9,24 139:13	215:7 245:8 247:2,13 288:18 297:13 299:2 312:9	multiple 154:12 197:10 198:21 203:12 207:9 216:17	244:16 245:12,15,22 246:12
MK3475 284:4	motivation 160:20 180:25 290:18 298:9	mutation 111:7,18	Neugut's 19:8,10,20 33:3 36:6 37:20 38:13,24 39:2,11, 22 40:12 41:13 44:4,16 45:2,4,10 46:2,18 47:23 48:3,9 49:7,9,20 50:6, 12,16,24 53:3,7,11 55:19 68:20 246:13 256:2
MMR 111:18 291:25 292:4	move 169:12 187:19	mutations 111:15	
modified 279:16	moved 157:14	myeloid 141:8 205:20,21	
modifies 205:12	MSD 291:21	<hr/> N <hr/>	Newberger 18:16,21
modulates 212:6	MSI 16:22 23:10 31:21 34:21 42:5 44:13 47:8 49:2 52:21 57:11 59:24 60:3 62:3 63:24 64:21 67:18 83:11 89:14,16 122:15 156:23 204:8 214:23 215:8 239:24 247:4 251:14 252:8,10, 13 266:19 267:2 268:7, 23 281:25 283:5,17 284:2,9 289:24 298:11 301:15 309:6 313:16,17 315:25	naive 166:3	newly 276:3
modulator 211:16		named 13:2 166:15	news 291:17 292:17
modulators 210:20 211:2		names 18:8 21:12 64:23 86:12 90:22	nexus 240:15 241:4,14,21
molecule 222:15		nature 26:10 87:25 117:13 185:11 200:7	Nickolas 235:25
moment 271:15		NCCA 276:14	night's 91:15
Monday 93:17,19		NCCN 109:20 274:7	NIH 139:9
monetary 229:8	MSI-HIGH 65:21 72:20 87:13 89:12 104:22 105:2 110:7,9,11,19,23,24 111:4,20 112:7,10 115:23 116:3 157:6 198:3,15 215:2,6 238:7, 18,22 239:4,16 240:8 244:25 245:9,18 246:6, 24 247:9,10,13,15,17 251:20 252:2,3,9,16,20 253:6,9,16,18 266:20 267:15 281:9 282:2,21 283:10,23 284:7 286:23 287:3,7,16,19 288:21 289:11 290:21 297:15 298:14 299:19 308:8, 11,21 309:4 311:13,15, 18 312:8,10,15 313:4 314:20 315:2,20,25	NCT01876511 263:22 264:13	Nils 51:13
money 225:4,17 227:12 230:13		necessarily 101:22 132:11 143:13 148:22 185:11 188:3 201:9 208:5 272:21 275:15	nivolumab 89:12 100:21 287:8 308:20 313:3,8,19 314:10,19
monitor 126:13,15 157:14		needed 67:20 268:22	NK3475 283:19
monitoring 224:5		negative 204:21 284:3	nonclinical 122:5
monoclonal 206:9 209:7,10,14,20 212:16 221:7	multicenter 171:5	net 312:18	nonessential 63:2,5,11
month 22:3	multidisciplinary 130:15	Neugut 16:25 23:11,14,17,21 36:12,21 38:4,21 40:19 41:5,9,17,20 42:20 43:4,7,12,23 44:3,18 45:17,23 46:4 47:12,16, 25 49:14 50:3 51:10 55:7,13 67:23,25 68:5, 9,10,13,25 69:6 90:3,9	nongi 212:2
months 86:22 99:19,24			nonmetastatic 272:15,18 273:6,9 274:17 275:2,8
moonlighting 95:17,20			nonobviousness 310:20
morning 8:8,23,24			nonrandomization 150:12
motivate 169:9 245:24			
motivated			

nonrandomized 146:11 149:3,11,21,25 150:23	NYU 98:7,21 108:24 109:22 182:23 230:16	167:1 168:1 169:1 170:1,16 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1 189:1 190:1 191:1 192:1 193:1 194:1 195:1 196:1 197:1 198:1 199:1 200:1 201:1 202:1 203:1 204:1,25 205:1 206:1 207:1 208:1 209:1 210:1 211:1 212:1 213:1,14 214:1 215:1 216:1,7,9 217:1 218:1 219:1 220:1 221:1 222:1 223:1 224:1,12 225:1 226:1,8, 13 227:1 228:1 229:1 230:1 231:1 232:1 233:1 234:1 235:1 236:1 237:1,17 238:1 239:1 240:1 241:1 242:1 243:1 244:1 245:1 246:1 247:1,23 248:1 249:1 250:1 251:1 252:1 253:1 254:1 255:1 256:1 257:1 258:1 259:1 260:1 261:1 262:1,25 263:1,13 264:1 265:1 266:1 267:1 268:1 269:1 270:1 271:1,24 272:1 273:1 274:1 275:1 276:1 277:1 278:1 279:1 280:1,14 281:1 282:1 283:1 284:1,11 285:1 286:1 287:1 288:1 289:1 290:1 291:1,9 292:1 293:1 294:1 295:1 296:1 297:1 298:1 299:1,12 300:1 301:1 302:1,3 303:1,25 304:1 305:1,7 306:1,9 307:1 308:1,3,4 309:1 310:1 311:1 312:1 313:1 314:1,24 315:1,19	47:17 48:5,18 49:10,23 53:4,15 55:8 56:2,8,22 57:23 58:9 59:16 60:10, 18 61:11,21 62:13 63:3, 12 66:4,11 67:9 68:16 71:2,18 80:2,8,9 81:4 84:7 85:2,13,22 90:16 97:7 101:20 107:7,11 108:3 109:12 110:13 111:23 113:6 114:3,22 116:16 118:18 119:9 120:6 121:12,20 122:7 123:12 124:8 128:10 129:23 131:19 132:2,9, 25 133:9 138:2 139:4 143:6 145:15 147:12,17 148:2 149:17 150:2,14 151:12 152:13,20 153:16 154:8,17 155:5, 12,23 156:10,15 158:21 159:19 160:8,23 161:13,21 162:5,17 163:14 165:18 167:17 168:24 170:18 173:22 177:10 179:8 180:19 181:19 183:16 184:8,16 187:11 188:5,15 189:25 190:6 192:2,7 193:13 195:14 196:14 197:5 198:13 199:6 200:4,15, 24 201:17 202:7,24 203:25 206:11 213:18 214:16 219:9 220:2 226:15 229:10 234:16 237:21 238:12,23 239:10 240:16 241:6 248:24 249:6,18 250:19 251:6 252:5,21 253:10, 22 254:6 255:6 258:7, 21 259:4,25 260:19 261:18 262:5 263:17 266:2,21 267:21,22 268:13 270:6,20 271:11 272:7 273:25 274:21 275:10 276:11 277:6,15 278:6,16 281:2,12 282:4,15,23 283:13 284:15,23 286:11 289:8,21 290:8,16 291:11 293:7 295:17 296:12,25 300:11,13,19 301:9 304:3,7 305:9 306:11 307:13,19 309:21 314:3,14
nontherapeutic 145:18	O		
note 19:2,5 43:3,11 157:13 271:23 307:23	oath 8:14 9:21,24		
noted 18:5 59:4,7 130:14 238:5 285:24	Oberstein 8:1,23 9:1,3,5 10:1 11:1 12:1 13:1 14:1 15:1,19 16:1,16 17:1 18:1 19:1 20:1,4 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1,19,23 29:1,2,8 30:1 31:1 32:1 33:1 34:1 35:1 36:1,5 37:1 38:1,10 39:1 40:1 41:1 42:1,8 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1,11 52:1 53:1, 12 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1,5 65:1 66:1 67:1 68:1 69:1 70:1,6,12 71:1 72:1,3,9, 19 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1,3 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1,17 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1 115:1 116:1 117:1 118:1 119:1 120:1 121:1 122:1 123:1 124:1 125:1 126:1,12 127:1 128:1 129:1 130:1 131:1 132:1 133:1 134:1,3 135:1 136:1 137:1 138:1 139:1 140:1 141:1 142:1 143:1 144:1 145:1 146:1 147:1 148:1 149:1 150:1 151:1 152:1 153:1 154:1 155:1 156:1 157:1 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1,14 166:1		
notes 18:3			
notice 16:16			
Novartis 141:17			
nowadays 116:24			
number 24:2,8,10,18,21 29:6 38:8 45:21 53:22 70:14 72:13 78:18 79:5,12,14, 16 126:22 127:14 134:17 137:8,11 139:15 148:24 165:12 170:14 191:18 194:16,19 224:23 225:7,12 226:11 236:22,23 241:23 263:11,22 264:13 291:7 301:24 303:23 305:5,17 306:7,20 313:21			
numbered 39:7			
numbering 53:13 54:4			
numbers 39:17 40:18 54:10 76:19 79:17 283:17			
Numeral 54:11,14,21			
numerous 43:4			
nurse 148:20 256:9,12			
NYSE:MRK 291:20		object 13:10 16:3,11 27:6 29:18 32:24 36:24 39:25 40:15,21 42:12 43:13,19 45:19 46:6,21	

objection 203:6 219:14 261:12, 15,17	76:4 94:18	opine 235:5	82:19 89:15 149:11 150:4,18 151:14,18 152:5,9 153:12 163:6 201:20 203:16 206:20 213:24 214:22 238:3 239:6,18,25 240:10 242:17 243:7,19 246:22 251:11,16 259:24 260:9,17,22 261:3 266:6,25 267:11 268:3 272:12 274:18,25 277:18 286:15 287:9 288:11 297:9 298:8,25 310:3 311:12 312:6 313:11
objections 159:4 261:9	oncologist 99:5 195:11 199:25 200:9,18,23 201:10,13, 14,16,21 255:15 256:10 262:16 273:21 280:15	opinion 19:7 38:22 47:16,23 49:6 50:5 58:2,25 59:6 60:23 61:3 68:22,23 69:4,7 71:12 89:15 109:13,21 115:15 117:7 137:3 234:14,20 235:8, 12 238:9,11,20 239:7 240:6 243:23 244:4,7 245:7 250:2 255:2,5 258:18,25 260:7,15 261:4 266:17 272:3 276:7 286:8 315:19,24	organization 185:16
objective 46:17 47:2 49:8,13,21 50:4 203:18	oncologists 256:7	opinions 19:17 30:5,19 32:10 36:22 41:6,18,20 43:4 44:2,18 45:2,10,25 46:2,4,18 47:15 48:3,15 49:7,9,22 50:11,24 51:21 56:19,21 57:22 58:8 59:14 60:9 61:2 62:8,11 64:13 66:16 67:7 68:14,20,23 71:9 83:15 84:5 198:2 237:19 240:15 245:5 248:17 249:21 250:5 262:9 284:12,21 285:2 304:15 309:19	organizing 185:17
objectively 48:14	oncology 95:6,19 96:14 98:5 99:14 117:14 118:16,21 119:3,7 135:10 191:12, 18 192:13 206:25 207:3 208:23 209:15 210:6,22 211:9 234:23 246:8 294:4	opportunities 75:24 117:2	oriented 134:14
objectives 203:8,10,12	oncolytic 210:4,7,15,18	opportunity 75:24 117:2	origin 113:15,24
observations 299:16	one-time 231:11	opposed 158:25 159:2	original 113:14
obtain 108:11 134:7,8	ongoing 12:5 128:5	option 153:10 279:20	ostensibly 52:17
obtained 104:5 188:20	online 82:23 116:23 117:10,11 195:23 196:6,9,12 197:13 199:10	options 112:4 131:15 132:18 153:4 193:24 275:6 278:25 279:2	outcome 132:20
obvious 14:21 239:9 240:12 268:15	open 12:6 37:23 131:11 223:6 267:12 280:24 295:7	opposed 158:25 159:2	outcomes 122:12 145:4 205:14
obviousness 15:13,14,15 239:20 240:4 285:8	open-minded 57:6 58:13	option 153:10 279:20	outline 57:9 58:21 309:23
occasionally 121:2	opened 183:11 219:6	oral 233:7 236:20,24	outreach 76:2
occur 86:15 92:20 93:16	Openpayments 226:8	order 153:2 180:11,14 193:20 205:13 251:18 252:24 253:3 261:21 269:20 307:25 311:5	outstanding 24:23 25:3
occurred 88:15 270:12,13	Openpaymentsdata. cms.gov 227:3	ordinary 15:16 31:3 44:9 47:4,21 48:24 57:5,14 60:5 63:20 64:9 67:15 69:14	overcome 279:16
occurs 146:22	Openpaymentsdata. cms.gov. 226:20		overlapped 71:5
off-label 101:24 102:2 313:9,13 314:8,12,22	operate 225:19		overly 181:21
offering 248:12	operates 227:13		overseeing 138:7
offhand 127:9 233:14,15			owner 34:9 35:5 90:8
office 14:8 35:7,12,14 225:2			
official 120:21 139:8			
Ohio 74:10,12,15 75:5,10,16			

owner's 34:6,14 36:2	131:4 134:23 135:5,8 136:4 147:2 177:4,24 178:20 203:7 208:16,18 212:9 232:22,24 241:3	67:17 69:13 83:10 89:18 90:8 235:14 238:2,6,17 239:4,8,15, 23 240:7 241:25 242:5, 9,13,16,25 243:5,9,14, 16 250:22 255:15 256:20 257:20 259:17, 22,24 260:7,10,16,18, 23,24 261:7,23 262:12 265:2 285:8 286:3 310:10,15,20,22 311:5	patient-oriented 97:12 patient-specific 134:19 patients 65:21 87:24 89:12 99:10,12,17 100:4,7,18 101:17 102:3,13,18 103:13 105:2,4,8,16,20 106:3 108:7 109:7,23 110:7,20 113:3 115:22 116:3 127:13,17 130:17 131:3,15 132:23 133:4, 7,25 136:12 144:21 147:5,14,22 148:6,14, 17,18 153:9 154:24,25 157:2,6 166:2,13 168:17 169:4,10 172:18 175:5,9,15 176:21 177:7 183:12 192:13, 16,19,20 193:3,6,21 194:11 195:2 200:3,13 203:21 204:10 205:8 206:3 220:13 221:19 223:7 224:5 251:13 252:4,15,17,18 253:16 255:18 256:8,17 257:22 258:2,3 262:19 264:3 265:24 270:16 271:17 274:4,8,9 275:20 290:23 292:11 296:8,18 297:20 298:14,20 308:13 309:2,3,7 312:19 313:21,25 315:2,3,21,22
P	partes 15:21 partially 218:10 participants 136:20 participate 103:6 129:14 131:8 166:8 182:5 263:24 participated 86:23 104:15 108:21 164:12,21 165:2 171:17,20 187:3 210:18 216:10 217:8 participating 126:21 185:8 187:8 217:4 222:8 participation 130:18,22 132:5,15,24 133:8 parties 185:14 248:7,19 249:11 250:3 254:11,23 partly 12:24 parts 59:4,22 107:20 134:22 281:15 party 9:19 passed 141:19 past 20:10 92:9,21 231:8 patent 11:15 13:2,9,17,19,23 14:7,8,9,12,16,19,20 15:4,10,18 16:21,22 23:2,5,7 26:3,21 31:2,5, 20 34:6,9,14,20 35:5,7, 11,13 36:2 39:12 42:5 44:8,12 45:14 47:3,7 49:4 52:22 57:4,10 58:14 60:2 63:23 64:10	patent-related 11:9,12 patentability 14:10 patents 12:15,16,19,22 13:4,6, 14,17 pathologist 262:24 pathway 292:4 patient 101:8,9 102:15 108:16 109:11 110:2,5,9,11,21 111:20,22 112:3,10,11, 18 115:14 127:5,7 129:16,20 130:9,11,13 131:6 132:18,22 133:18 134:14 135:13 146:18 169:14 173:6 192:24 193:23,25 204:23 214:25 246:5,25 247:3, 5,7,9,14,16,21 252:10, 25 253:9 256:22 257:23 259:14 266:7 267:15,25 268:8 269:6 271:18,21 272:4,11,15,18,21,24 273:2,21,23 274:10,12 275:2,9 276:3,8,13,17, 19,20 277:2,19,24 278:21 279:6,10 280:16,21 281:10,17, 23,24 282:7,18 283:2,9, 12,18,22,25 284:3,7 287:7,11,13,15 288:16 297:12,14 299:3 308:9, 22 312:10 313:13,15,17 314:19 patient's 281:8	Paul 8:1 9:1,3 10:1 11:1 12:1 13:1 14:1 15:1 16:1 17:1 18:1 19:1 20:1,17, 18 21:1,5,10 22:1,6,12 23:1 24:1 25:1 26:1 27:1 28:1 29:1,2 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1

79:1 80:1 81:1 82:1
 83:1 84:1 85:1 86:1
 87:1,4 88:1 89:1,2 90:1
 91:1,11 92:1,16 93:1,
 10,23 94:1,9 95:1 96:1
 97:1 98:1 99:1 100:1
 101:1 102:1 103:1
 104:1 105:1 106:1
 107:1 108:1 109:1
 110:1 111:1 112:1
 113:1 114:1 115:1
 116:1 117:1 118:1
 119:1 120:1 121:1
 122:1 123:1 124:1
 125:1 126:1 127:1
 128:1 129:1 130:1
 131:1 132:1 133:1
 134:1 135:1 136:1
 137:1 138:1 139:1
 140:1 141:1 142:1
 143:1 144:1 145:1
 146:1 147:1 148:1
 149:1 150:1 151:1
 152:1 153:1 154:1
 155:1 156:1 157:1
 158:1 159:1 160:1
 161:1 162:1 163:1
 164:1 165:1 166:1
 167:1 168:1 169:1
 170:1 171:1 172:1
 173:1 174:1 175:1
 176:1 177:1 178:1
 179:1 180:1 181:1
 182:1 183:1 184:1
 185:1 186:1 187:1
 188:1 189:1 190:1
 191:1 192:1 193:1
 194:1 195:1 196:1
 197:1 198:1 199:1
 200:1 201:1 202:1
 203:1 204:1 205:1
 206:1 207:1 208:1
 209:1 210:1 211:1
 212:1 213:1 214:1
 215:1 216:1 217:1
 218:1 219:1 220:1
 221:1 222:1 223:1
 224:1 225:1 226:1,7
 227:1 228:1 229:1
 230:1 231:1 232:1
 233:1 234:1 235:1
 236:1 237:1 238:1
 239:1 240:1 241:1
 242:1 243:1 244:1
 245:1 246:1 247:1

248:1 249:1 250:1
 251:1 252:1 253:1
 254:1 255:1 256:1
 257:1 258:1 259:1
 260:1 261:1 262:1
 263:1 264:1 265:1
 266:1 267:1 268:1
 269:1 270:1 271:1
 272:1 273:1 274:1
 275:1 276:1 277:1
 278:1 279:1 280:1
 281:1 282:1 283:1
 284:1 285:1 286:1
 287:1 288:1 289:1
 290:1 291:1 292:1
 293:1 294:1 295:1
 296:1 297:1 298:1
 299:1 300:1 301:1
 302:1 303:1 304:1
 305:1 306:1 307:1
 308:1 309:1 310:1
 311:1 312:1 313:1
 314:1 315:1

pay
 179:5

PCR
 194:4

PD-1
 141:14 205:18 207:7
 220:14 246:6 286:23
 287:12 311:16

PD-L1
 205:18 207:21

peer
 120:10

peer-reviewed
 233:6,12

pembrolizumab
 65:21 87:17 89:11
 100:22 103:19,23
 104:3,5,14,23 105:20
 106:2,7,14,18,19 140:9
 157:2,7 166:2 168:3
 204:10 217:14,19,23

218:4,7 220:15 231:18
 246:7,25 247:18 251:22
 252:12,19 253:18
 283:19 290:23 292:10
 298:15 311:16 312:11
 313:19 314:16

pen
 27:22

pending
 10:16 158:11

people
 18:8 20:23 78:4 87:2,6
 96:7 117:2 122:16
 138:15 142:11,17
 143:18 145:3,22
 155:15,17 156:3 173:25
 174:20 181:23 182:2
 190:20 256:8 267:8
 285:22

people's
 37:19 58:16,23 189:11
 235:6

percent
 130:19,23 142:4
 168:10,18 271:14

percentage
 87:24 225:25

percentages
 87:23 219:19

perception
 235:2

perform
 81:14 110:19 193:2

performed
 83:3

performing
 73:15 81:23

period
 99:21 103:2,14 104:11,
 19 105:15 217:21
 229:20 286:6 299:18

Perlmutter
 98:6

Pernot
 17:8 73:8,12,19

person
 15:16 27:23 28:7 31:2

44:9 47:4,21 48:24
 57:5,14 60:5 63:19 64:9
 67:15 69:14 82:19
 89:15 93:14,15 94:11,
 12 101:13 112:4 115:13
 125:16 130:5 133:4
 138:6,8,11 139:10
 142:5 149:11 150:4,8,
 18 151:8,14,18 152:5,9
 153:12 163:6 169:24
 174:11 181:9 182:16
 184:14 189:20 190:23
 194:13 195:21 196:20
 201:20 203:15 206:20
 213:24 214:10,22 238:2
 239:5,17,24 240:9
 242:17 243:7,18 246:22
 251:11,16 258:10
 259:8,23 260:9,17,21
 261:3,21 262:21 266:6,
 11,24 267:5,10 268:3,
 25 272:12 273:14
 274:17,24 275:14,21
 277:9,17 278:9 279:3,
 12,18 286:15 287:9
 288:11 297:9 298:7,9,
 25 310:3 311:11 312:6
 313:11

person's
 111:10

personal
 286:5

personally
 178:9 196:2 230:8,11

perspective
 31:2 238:2,4 239:5
 242:17 243:6,18
 262:10,14 268:3 297:18

pertinent
 78:19

petition
 33:8,10,12,16,17

petitioner
 33:13

Ph.d.
 38:4

pharma
 219:22 220:5

pharmaceutical
 11:16,20 84:12,14

185:15 224:15 225:10 230:18	pneumonia 96:8	179:17 196:8 197:14,17	167:8,9
phase 141:23,24 142:2,7,12, 13,14,18,19,21 143:3,4, 5,12,16,20,21 144:2,4, 7,9,11 156:25 159:23, 24,25 160:3,5,6,16,21, 22 163:22 165:25 171:4 176:23 177:9 292:7,24 293:11 296:7,17	point 49:15 75:18 104:9 118:5 146:21 151:2 154:6 163:5 169:25 199:24 245:13 278:13 295:13 296:24	Post-its 17:18	prediction 190:21
phases 141:21	pointed 91:17	posted 139:14 178:16 181:7 195:22 196:6,17,19 197:22 198:17 199:22 290:2,4	predictive 190:11,13,15,25 191:8, 11,23
phone 86:9 139:15,16	pointing 271:25	poster 233:8 236:20,25	predisposes 110:25
physician 115:5,6 185:8 187:7	points 43:23 45:5 46:11 47:12 58:16,17,23,25 59:2,11, 20 60:22 207:15 308:6	posting 129:13 178:18 196:6 269:24 288:14	preliminary 12:2 34:5 88:9 119:20 144:3 168:16 177:18 299:6,10
physicians 134:17 226:24 246:4	poor 20:15 86:12	postings 126:13,16,19,23 127:18 128:8 270:11	premise 16:4 29:19 40:22 46:7, 22 48:6,19 49:24 56:3, 9,23 58:10 59:17 60:11 61:12,22 62:14 63:13 68:17 81:5 97:8 114:23 123:13 129:24 159:20 160:24 177:11 184:17 214:17 229:11 237:22 238:13,24 239:11 240:17 241:7 249:7 252:6 253:11,23 254:7 258:8 259:5 260:2 268:14 274:22 278:17 282:16 284:16,24 289:9,22 300:14,20
pick 117:20	population 108:17 122:18 169:14 274:10	posts 197:2 199:2	preparation 24:5 27:17 31:10 37:12 49:20 81:12 92:3,19
pieces 58:7 64:12 65:3,12,16, 23 66:14 67:6 69:10 91:18	POR 34:9	potential 90:14 112:3 127:16 130:8 132:14 182:8,11 211:14	prepare 37:3 51:4 91:13 94:14
Pierce 90:12,13	portion 281:13	potentially 20:11 78:3 111:2,12 112:15 132:13 148:4 163:24 164:9 188:17 267:19 295:9 296:3	prepared 28:11 186:23
piles 16:17	POSA 244:17,24 245:8,16,17, 24 246:3,16 247:12 255:14,21 256:11,13, 19,25 257:12,16,19,24 258:4,10,20 259:3,8,16 260:5 261:22 262:3,4, 11,14,16,20 268:5,16, 22 269:23 272:23 278:8,19	power 203:23 204:7,13,15,17	preparing 26:14,18,23 28:12 256:4 302:14 303:13 304:13
place 18:3	positive 110:12 215:9 251:14 252:11,14 267:3 268:7, 23 281:25 283:17 284:10 288:19 298:11, 13 299:4	powered 204:23	prescribe 100:7,8,16,18 101:6,8, 15,17 109:6,10 111:22 115:21 116:2
places 68:15	possibilities 146:12	powerful 143:25	prescribed 102:20
plain 249:4,10	possibility 163:7	practice 98:5 115:21,25 116:6 118:23 119:3,7 126:13 135:18 136:3,4 192:12	prescribing 102:17
plan 24:6 298:6	possibly 173:17	practiced 108:14	prescription 313:7,10 314:9,18
planned 202:14	post	practicing 99:4	
planning 10:12		practitioner 256:12	
play 202:5		practitioners 256:9	
played 80:24		preclinical	

<p>presence 193:11</p> <p>present 20:21,23 21:14 66:25 92:16 236:9</p> <p>presentation 237:14,16 241:2</p> <p>presentations 233:8 236:20,25 237:4, 5</p> <p>presented 186:8 195:23,25 196:16 233:7</p> <p>press 291:14 293:15,19</p> <p>presume 12:25</p> <p>pretreated 292:11</p> <p>pretty 64:15 175:17 191:15</p> <p>previous 12:24 247:11,16 312:8</p> <p>previously 11:6 12:21 15:10 23:8,9 25:5,15 32:18 44:12 55:3 60:3 63:24 64:22 69:13 123:9 171:7 172:13 253:20 254:4 263:14 270:23 282:9</p> <p>primarily 128:15 135:22 137:9 207:6 214:2</p> <p>primary 34:19 37:16 42:3,18 59:23 61:25 62:2 117:22 121:3 126:25 128:4 132:17 136:22 138:20 168:22 174:11 176:13 177:16,19,22 182:12,15 194:6 202:23 203:18 239:13,21 240:3</p> <p>principal 106:25 107:23 136:22 137:12,16,17,22 138:9, 14,20 139:3,11,15,18, 23 140:13,20 166:16 171:24 217:16 218:14 220:10 222:20 302:21</p>	<p>principle 202:19</p> <p>printed 109:19 119:15 135:25</p> <p>printing 226:18</p> <p>prior 14:20,21 15:11,17 18:6 19:10 22:7,13,17 23:3,8 26:21 28:4 31:6,21 34:21,22 44:12 45:15 47:2,8,22 48:25 49:3 50:2 57:5,12 58:14,18 60:4 63:16,19,22 64:6, 7,12 65:3,13,16,24 66:8,15,20 67:6,12,19 69:5,8,11 73:5,19 76:24 83:8,12,21 91:18 95:14 103:25 104:12,20 105:18 131:7 163:4,20 164:19 176:23 185:2,5 200:8,18 201:3,4,5,9,23 202:15 238:8,19 239:15,23 240:9 242:2, 3,10,14,15,18,25 243:4, 8,11,13,17,20 246:8,23 267:7 268:9,19,21 269:3,5 271:22 272:15 275:3,16 276:9 278:4, 15 281:19 283:5 286:10 287:6 310:25 311:5,13</p> <p>priority 286:10,16,18</p> <p>problem 115:10</p> <p>proceed 185:3,6</p> <p>proceeding 15:21,22 33:12 39:16, 18</p> <p>proceedings 15:25</p> <p>process 13:20,23 14:3,5 116:13</p> <p>processes 116:18</p> <p>produce 308:13,25</p> <p>produced</p>	<p>8:18</p> <p>product 84:13</p> <p>professional 82:21 255:16 256:6,16 262:17</p> <p>professor 74:10,12,17</p> <p>program 134:11</p> <p>progress 171:18 186:21</p> <p>progressed 266:12 267:6 269:2 275:3,17</p> <p>progresses 275:22</p> <p>prohibit 123:20</p> <p>projects 12:22 13:3</p> <p>prolonging 279:2</p> <p>promising 177:15</p> <p>pronounce 140:15</p> <p>propose 311:9</p> <p>proposed 14:7 272:20 273:24 274:19 276:10 277:5 280:17,25 281:11 282:19 283:11,24 289:6,14 290:6,12,14, 21,22 292:18 293:12, 16,23 297:19 298:17</p> <p>proposes 310:18</p> <p>proposing 310:17</p> <p>prospective 135:21 144:15,17,20 145:7</p> <p>prospectively 145:12,25 146:6</p>	<p>protective 307:25</p> <p>protein 111:18</p> <p>protocol 109:2</p> <p>provide 35:20 48:10 77:10 95:18 137:4 179:20 181:14 218:22 219:2 237:19 238:9,11,20 239:7 240:15,19 241:4 243:22 244:3 247:5 284:12,20 285:2 299:15 301:6 305:21</p> <p>provided 37:17 44:19 65:14,25 66:21 81:19 141:17 218:25 219:5 230:2 300:18 301:7</p> <p>providing 35:23 95:19,22 96:2 245:5,7 258:2 259:13 309:19</p> <p>provision 301:14</p> <p>public 16:2 64:8 65:19 82:3 128:4 170:11 179:21 180:6,11,14,25 181:6, 15,18,22 182:9,12,20 287:10 288:13</p> <p>publication 119:15 123:5 170:22,24 171:2,3,10 196:19 298:6</p> <p>publications 119:22 233:13 234:11 240:23</p> <p>publicly 15:12 16:10 185:23 196:18 200:22 201:6,11 289:7 298:25</p> <p>publish 120:4,16,18 121:2 196:9</p> <p>published 64:8 82:3,17 120:3 123:25 224:4 233:6,21,</p>
---	--	---	---

<p>24 234:2,5,8</p> <p>publishing 196:12</p> <p>Pubmed 81:25</p> <p>purported 23:2 299:17</p> <p>purpose 182:2,12,15 232:9 265:17</p> <p>purposes 131:23 165:19 170:19 181:24 183:2 190:5 226:16,24 255:14 260:22 291:12 304:7 305:10 306:12</p> <p>pushback 98:15</p> <p>put 27:22,23,25 64:3 90:7 100:13 127:11 133:19 170:5 177:23 183:23 225:8 233:4 254:14 308:2</p> <p>putting 27:2 82:4 107:20 196:22 271:18</p> <hr/> <p style="text-align: center;">Q</p> <p>qualification 252:13 253:3</p> <p>qualifications 282:13</p> <p>qualified 207:2 277:25 281:23 282:12,18</p> <p>qualify 173:10 256:13 258:20 259:3,8 276:9 281:21</p> <p>quality 133:12,16</p> <p>question 10:16,17 11:18 12:25 13:11 16:4,5,12 27:7 29:14,19,20 32:17,25 36:25 37:7 39:25 40:2, 16,22,23 41:3 42:12,13</p>	<p>43:14,20 44:23 45:20 46:7,8,22,23 47:18 48:6,7,11,18,19 49:11, 24,25 52:15 53:5,16,25 55:9 56:3,4,5,9,10,23, 24 57:24 58:10,11 59:17,18 60:11,12,19 61:12,13,16,22,23 62:14,15 63:4,13,14 66:4,6,12 67:10 68:17, 18 71:3,6,19 80:2,3,10 81:5,6 84:8 85:3,14,23 90:17 97:8,9 101:21 105:15 107:8,9,12,14 108:4 109:13 110:14 111:24 113:7 114:4,23, 24 116:17 118:19 119:10 120:7 121:13,21 122:8 123:13,14 124:9 125:23 128:11,25 129:24,25 131:20 132:3,10 133:2,10 135:3 136:17 138:2,3 139:5 143:7 144:23 145:16 147:4,13,18,20 148:3 149:17 150:3,15 151:13,20 152:10,14,21 153:17,20 154:9,10,18 155:6,13,24 156:11,16 157:5,8,13 158:11,18, 22,24 159:20,21 160:9, 24,25 161:14,22 162:6, 18 163:15,17 167:18 168:25 173:23 177:11, 12 179:9 180:20 181:20 183:17 184:9,12,17,18 187:12 188:6,16 190:2, 3,7 191:15 192:3,5,8,15 193:14 194:13 195:15 196:15 197:6 198:14 199:7 200:5,16,25 201:18 202:8,10,25 204:2 206:12 213:19 214:17,18 219:10 220:3 225:16 229:7,11,12,21, 24 234:17,19 237:22,23 238:13,14,24,25 239:11,12 240:17,18 241:7,8 242:7 244:2 248:25 249:7,8,19 250:9,19,20 251:7,8 252:6,7,22 253:11,12, 23,24 254:2,7,8 255:7 258:8,9,22,23 259:5,6 260:2,3,12,13,20</p>	<p>261:13,18,19 262:6 263:18 266:3,22 267:20,22,23 268:13,14 270:7,21 271:12,13 272:8 274:2,22,23 275:11 276:12 277:7,16 278:7,17,18 281:3,13, 14,15,17 282:5,24 283:14 284:16,17,19, 24,25 286:12 289:9,10, 21,22 290:9,17 293:8 295:18 296:13 297:2 298:19 300:13,14,20,21 301:10 307:14,20 309:22 314:4,14</p> <p>questioning 157:15</p> <p>questions 78:20 89:9 134:24 213:8 261:10 315:8</p> <p>quickly 38:25 39:5</p> <p>quote 41:2 43:7,23 49:17 50:3,16 61:14,25 62:19, 21 64:2,19 91:19 277:20 294:2</p> <p>quote/unquote 101:24 113:13 136:23 275:25</p> <p>quoted 47:25 52:21 59:23 61:7 67:19 70:17 71:5 72:16 77:24 78:4 285:15</p> <p>quotes 71:13</p> <p>quoting 55:3,17</p> <hr/> <p style="text-align: center;">R</p> <p>radiation 256:9</p> <p>raised 45:5 285:20</p> <p>randomization 146:22 148:25 150:11</p> <p>randomize 146:17 148:17 149:7</p>	<p>153:8</p> <p>randomized 143:23 146:11,14,18 147:5,6,15,22 148:7,14, 17 149:3,5,21,25 150:10,22 151:5,11 153:2,15,23 171:4</p> <p>randomizing 148:23</p> <p>randomly 146:24</p> <p>range 24:3 26:10 131:14 155:25 194:15 213:16 216:25</p> <p>rapid 130:16</p> <p>rare 116:5 119:14,23 121:23</p> <p>rate 25:20,23 26:6 157:5 163:12 164:3 168:9</p> <p>rationale 107:16 108:9 154:20 155:4,8,11,19 156:8,14 157:10 158:19 159:7, 10,18 161:8,19,23 162:2,11 166:19,21,23 167:7 174:8,14 177:6</p> <p>RATLIFF 13:10 16:3,11 27:6 29:18 32:24 36:24 39:20,24 40:15,21 42:11 43:13,19 45:19 46:6,21 47:17 48:5,17 49:10,23 52:14 53:4,15 55:8 56:2,8,22 57:23 58:9 59:16 60:10,18 61:11,21 62:13 63:3,12 66:3,11 67:9 68:16 69:16 70:5 71:2,18 79:25 80:7 81:4 84:7 85:2,13,22 86:16 90:16 97:7 101:20 107:7,11 108:3 109:12 110:13 111:23 113:6 114:3,22 116:16 118:18 119:9 120:6 121:12,20 122:7 123:12 124:8 125:8,21 128:10 129:23 131:19 132:2,9,25 133:9</p>
--	--	---	--

137:25 139:4 143:6 145:15 147:12,17 148:2 149:13,16 150:2,14 151:12 152:13,20 153:16 154:8,17 155:5, 12,23 156:10,15 157:12,22 158:21 159:4,19 160:8,23 161:13,21 162:5,17 163:14 165:18 167:17 168:24 170:18 173:22 177:10 179:8 180:19 181:9,19 183:16 184:8, 16 187:11 188:5,15 189:25 190:6 192:2,7 193:13 195:14 196:14 197:5 198:9,13 199:6 200:4,15,24 201:12,17 202:7,24 203:6,25 206:11 213:3,9,18 214:16 215:15 219:9,14 220:2 226:15 229:10 234:16 237:21 238:12, 23 239:10 240:16 241:6 248:24 249:6,18 250:18 251:6 252:5,21 253:10, 22 254:6 255:6 258:7, 21 259:4,25 260:11,19 261:5,11,16 262:5 263:17 266:2,21 267:21 268:12 270:6,20 271:11,23 272:7 273:25 274:21 275:10 276:11 277:6,15 278:6,16 280:2 281:2,12 282:4, 15,23 283:13 284:15,23 286:11 289:8,19 290:8, 16 291:11 293:6 294:19 295:17 296:11,25 300:11,19 301:9 304:3, 6 305:9 306:11 307:13, 19 309:21 314:3,13 315:9	24 77:6,20,22,25 91:15 116:7 117:10 118:11,13 125:5,16 126:16 128:20,22 129:6 267:13 293:6 294:23,25 296:11,15 reader 124:3 125:3 reading 77:7 116:10,22 149:23 151:8 203:16 214:10,12 251:17 266:25 267:8,15 269:19 272:13 278:19 real 271:15 reality 131:10 realtime 157:16,18 reason 10:20 117:22 155:14,18 237:11 276:20 298:23 reasonable 43:17,21 243:23 244:4, 7 245:2,6,10,19 246:2, 11,14,19 247:20 276:23 297:16 312:11 reasons 14:22 110:22 127:18 130:25 131:2 193:15,17 rebuttal 16:20 17:18 29:2 44:15 58:16,24 recall 9:9,12 20:9 21:2,12,17 22:3,9,19,25 33:21 34:8,11 35:5,10,22 42:22 50:14 52:6 54:25 55:14,23 66:22 70:19 73:5,16,24,25 74:22,23 75:2,8,22 76:5,11,23 78:7,18 85:15 86:20 87:10,21 88:22 89:9,21, 25 90:23 91:10 101:3,4 102:24 103:3,7 104:4, 16,18,24 105:17,22 106:4 119:24 140:7,14 161:2,17 164:24,25 171:24 172:5,6,7 183:18,20 187:5 188:24	191:4,21 197:12 212:16 231:25 232:2 233:14 236:8 237:6 264:18,19, 23 265:4 269:8 285:9 298:22 301:12 302:15 303:14 304:9,17 305:22 315:5 recalled 19:9 receive 96:22 97:5 116:22 117:16 146:21 147:2 153:14,24 204:19 226:24 229:25 230:11 232:21 251:19 276:21 277:22 279:10,14 received 12:11 29:3 38:5 97:23 147:24 165:8 170:11 174:21,22 176:4 179:12,15 224:14 226:8 227:9 228:2,20 229:19, 22 230:7,22 232:3,8,13, 18 258:16 263:8 273:5 275:3,16 278:4 291:4 301:21 303:20 305:2 306:4 312:14 313:3 recent 225:14 recently 139:14 140:10 recess 69:24 126:6 158:4 215:20 280:8 315:13 recognize 87:3 recollection 20:16 22:20 73:18,21 75:17 77:7 87:22 102:20 105:6 174:16 175:6 191:10 237:16 recommended 127:4 160:3 266:16 recommending 130:12 reconsider 255:9 record 8:7 9:2 16:22 23:10	31:21 34:22 42:5 44:13 47:8 49:2 52:22 57:11 59:24 60:3 62:3 63:25 64:21 67:18 69:22 70:4, 11 72:8,20 82:18 83:11, 23 89:14,16 98:11 122:15 123:7 126:4,10 156:24 157:21 158:2,8 197:4,8,11,15 198:4,7, 15,22 199:4 204:9 212:11 214:23 215:8,18 216:5 227:17 230:24 238:7,18,22 239:5,17, 24 240:8 244:25 245:10,19 246:2 247:4, 9,15 250:22 251:10 252:3,9 253:6 266:10, 20,25 267:15 271:24 280:6,12 283:16 298:11 307:23 311:13 312:8 313:16 315:11,17 records 78:24 80:22 81:12 230:22 297:11 300:17, 23 301:4 recurrent 275:24 refer 64:7 67:13 114:13 192:4 198:3 227:22 240:23 reference 17:2 66:8 72:22 82:14 85:4 91:18 121:10 122:6 124:4 206:21 298:23 referenced 37:18 41:14 55:4 64:22 68:11 69:3 71:11 127:2 references 15:17 23:9 32:19 41:17, 19 52:20,23 53:9 57:21, 25 64:2 67:13,19,20 70:17 77:13,17 78:9,11, 15,17 79:20,24 80:5 81:3,19 82:22 83:5 197:25 238:8,19 239:16 240:9 269:9 311:14 312:9 referral 111:5
---	---	--	---

referrals 130:17 referred 149:10 198:16 referring 29:11,15,16,22 82:15 108:5 148:12 149:19 151:21 153:7 167:22 174:3 190:8 199:12 201:13,15 203:3 268:8 287:25 292:17 293:22 299:8,11 refers 242:22 reflect 228:24 reflects 229:17 refresh 33:18 refreshed 300:5 refused 276:8 277:13,20 regard 61:15 62:6 68:2 regimens 131:7 registration 292:24 296:7 registrational 296:17 regular 73:6 116:25 regularly 116:7 regulatory 84:4,9,22,23 85:6,10,19 138:16 178:10,20 reiterate 109:15 related 9:11,12 11:14,15,19 28:16 32:14 103:4,19, 23 104:2,22 105:25 122:3 126:20 128:21	151:9 155:20 176:20 189:20 197:15 217:13 224:16 227:3 231:14 232:9 255:16 256:6,9 262:17 263:21 264:12 relates 256:20 relating 105:19 relation 230:23 relationships 231:3,5 release 120:20 291:15,17 292:17 293:15,19 relevance 128:18 133:19 relevant 83:5 88:2 113:2 116:14 117:3,19 119:2,6 152:10 169:13 194:25 245:23 259:20,23 260:8,16 271:20 286:10 310:4 311:8,21 relied 36:21 37:3 38:21 41:5, 17 42:20,24 56:16 66:16 69:6 71:10,21 298:4,5 302:5 relies 40:13 59:13 rely 40:9,19 62:10 67:5 69:5 72:15,19 73:8 74:3 76:6,14,16 77:2 83:13, 17 85:19 86:2,5 198:2 199:25 253:5,13 265:6, 9 269:22 288:3,7,23 293:13 relying 32:8 64:13,16 71:8,15 84:4 109:18 201:11 251:25 298:3 remember 92:25 100:23 102:22 104:13 105:9 106:11 119:7 191:6 208:6	removable 114:9,11 remove 18:11 19:19 273:8 removed 113:11 removing 30:13 113:10 rendered 239:9 repair 291:25 293:2 294:10,16 295:5,14,23 296:3,23 repeat 66:5 125:12 243:2,25 253:25 258:23 284:18 rephrase 180:10 replies 62:25 report 12:8,11 122:22 219:15 234:24 278:20 297:12 299:2,5 reported 15:11 123:6 229:4,15 243:17 268:2 286:7 298:24 308:9,20,24 309:8 reporter 8:10,14 10:6 157:14 165:14 170:7 reporting 138:17 reports 186:21 297:11 represent 54:8 302:3 315:21 representation 73:4 80:8,9 representations 297:23 representative 20:18,20 303:2 representatives 93:11 218:16	representing 52:14 198:9 315:3 reputation 234:23,25 235:3,6,9,10, 11 requested 14:25 82:7 172:25 require 136:19 required 9:24 178:24 180:3 184:25 187:21,25 251:13 252:24 269:5 270:16 271:6 requirement 108:15 183:10 250:12 251:17 270:3 requirements 107:15 181:2 182:24 183:5,6,19 257:15 requires 189:4 248:8,20 249:12, 16 250:4,24 254:12,25 265:24 268:18 research 32:2 73:6 75:20,21 97:12 99:22,23 118:16 121:23 122:14 128:14 134:14,18 185:16 205:3 224:16,20 226:23 227:10 228:9,15,21 229:2,9,18,25 230:6,12, 16,23 231:2 234:15,21 235:11 236:4,7,10 286:20 294:5 295:7 302:10 303:4 researcher 196:25 199:2 202:3 203:4,24 researchers 134:17 197:21 292:8 residency 94:23 resources 31:14,16 108:16 respect 20:8 21:19 250:6,16 259:24
---	--	---	--

respected 118:9,13 respond 75:23 189:22 261:17 309:7 responded 168:18 309:4 responding 90:8 response 34:5,6,9,14 35:5 36:2 90:9 118:24 149:22 157:4,13 168:9 177:8 204:19,20 212:2 246:7 247:18 248:3,8,13,16, 20,23 249:5,12,15,23 250:3,7,11,17,23 251:2, 4 252:19 253:8,18,20 254:4,12,16,24 287:11 288:16 308:8,13,21,25 responses 33:24 34:3,4,7 responsibility 138:15 184:24 186:20 responsible 107:19 138:7 139:25 184:24 responsive 294:12,17 rest 294:23 restate 239:13,21 289:23 result 168:5,16 179:23 299:4 resulted 12:22 results 110:18 124:6 168:15 171:4 175:4 176:5,7 177:9 195:12,13,22 196:4,5,12,22 197:2 199:2,13,20,23,25 200:7,11 202:5,13 215:9 224:4 286:25 287:4,6,18 288:8,19 289:6,18,20,25 290:13 291:22 292:17,23 293:18 294:9 295:7	298:12,13 308:11 retain 300:25 retracted 118:17 119:8,16,21,24 retrospective 144:15,25 145:2,8 retrospectively 145:13 146:4,7 revealed 23:8 review 12:15 15:21 18:4,20 19:16 24:4 27:3 32:13, 21 33:2,8,15,23 34:6 38:12 41:16 42:23 45:14 47:20 51:16,18, 24 52:2,5 54:17,18,23 55:11,22 58:19 64:18 65:10 69:8 70:6,9 72:6 76:25 77:12,16 78:21 80:12 81:12 84:21,23 85:10 108:10,11 116:15 117:21 118:22 119:6 120:10,11 126:22 128:7 129:18 152:8,12 153:21 187:9 257:3 264:17,22 270:24 300:2 302:13 303:12 304:12,14 314:24 reviewed 12:16 18:5,7,23 19:10, 12,13 30:19 32:19 33:20,22 34:11 36:6 37:9 41:19 52:18,20 54:24 55:15 65:7 69:8 70:20 72:3 73:3 77:9 78:7 80:4,13 88:7 89:13 91:21 187:2 189:6 264:15,19,20 270:11 299:23 305:16 reviewer 117:23 reviewers 123:3 reviewing 14:11 26:19 27:10 34:8 52:7 63:19 78:15,17,24 79:13 80:14,22 81:2 264:23	revising 27:13 revision 27:17 revisited 14:14 Rich 8:8 Richard 70:7 ring 90:19 289:2 ringing 139:16 risks 107:16 RMC9805 222:14 Roger 294:2 role 44:7 48:24 50:20 68:19 80:22,25 108:22,25 112:19,25 137:2 166:11,16 171:22 172:5 186:18,19 202:5 212:22 257:25 roles 260:25 room 121:16 Ross 90:12,13 roughly 93:7 194:9 routinely 110:6  rubric 312:5 rule 152:2 154:2 rules 160:14	ruling 153:22 run 98:14 running 195:17 196:20,21 217:4 225:6 <hr/> <p style="text-align: center;">S</p> <hr/> safe 142:9 160:2 safety 292:25 sales 312:18,23 Salipante 17:8 76:14,17,22 sample 194:14 scan 274:14  school 74:15 96:21,25 97:3,4, 19 Science 117:16 233:24 scientific 108:10 119:20 scientists 218:15 scope 191:16 208:25 212:11 235:5 screening 111:10 Sean 306:23 search 81:14,17,18,23 83:3,15, 20,23 84:2 196:3 searching 125:22
--	--	---	--

second-line 279:7	serves 117:23	side 102:6	188:22
secondary 240:20 241:10,16 284:13,21 285:3,4,6,12, 18,21 286:9 310:18	service 98:5 116:20	sign 21:25 270:24	skeptical 285:22
secreting 172:23 173:4	serving 9:14,16	signatures 302:18	skepticism 285:10,13 286:4,17 287:23
section 13:14 29:24 30:16,23 32:15,20,23 283:16	set 192:14,20	signed 19:14 21:18 88:16,18 302:21 303:2,7 304:20 306:23	skill 15:16 31:3 44:9 47:4,21 48:24 57:5,14 60:5 63:20 64:9 67:15 69:14 82:19 89:16 149:12 150:5,19 151:14,18 152:5,9 153:12 163:6 201:20 203:16 206:20 213:24 214:22 238:3 239:6,18,25 240:10 242:17 243:7,19 246:22 251:12,17 259:24 260:9,17,22 261:3 266:6,25 267:11 268:4 272:12 274:18,25 277:18 286:15 287:9 288:11 297:9 298:8,25 310:3 311:12 312:6 313:12
Segers 18:19,22	setting 87:15 128:17,19 129:3 154:25 213:22	significance 143:2 202:4 203:14	skimmed 91:16
selection 195:7	settings 190:17 192:17 215:4	significant 111:9	skip 160:17
self-reported 229:16	severe 175:16	signing 18:6 19:11 22:7,13,17 271:7	skipping 160:21
sell 84:13,18	share 71:13 117:4	similar 47:14,24 61:6 68:11,22 69:2 88:25 176:24	sleep 91:15
sending 117:25 118:6	Sharp 303:8	similarities 67:24	Slightly 90:2
senior 294:3	Sheridan 86:10,15,16,18,19 87:5, 9,10 88:5,15,24 89:5,8, 19,24 91:7 312:23	simple 142:20 183:23	slots 280:24
sense 22:21 310:2	Sheridan's 87:7	simplest 144:19	small 99:20,21 194:15 222:14
sentence 113:20 205:3,11 213:23 224:13 293:10 294:25 308:6	shifts 95:17	simultaneous 25:8 222:2 223:15	smaller 164:9
separate 98:13 114:9 183:5 188:12,13 199:13	short 69:24 126:6 158:4 280:8 315:7,13	single 53:7 87:21 89:22 110:9 127:9 129:12,13 156:4 161:16 164:25 181:9 187:23 191:22 214:25 232:2 287:7,13,15 288:15	solid 292:12
sequence 193:15	shorter 90:2	sir 157:23	someone's 234:20
sequenced 193:8,11	shortly 21:7	sit 24:7	sort 9:10 11:14 14:3,15 48:22 117:2 121:9
sequencing 194:5,21	show 150:25 160:2 199:20	site 81:25 82:22 113:14,24 138:5,6,13 148:19 171:25 220:10	
sequential 160:7,13	showed 301:6	sitting 50:23 51:5 191:5,9	
serve 106:25 138:13 157:10 158:19 159:10,18 190:4 231:6 237:25	shown 35:2,14,18	situations	
served 11:6,11,24 231:8	shows 142:22		
	sick 175:17 273:14		

<p>124:5 129:7,18,21 132:22 135:16 138:20 140:17 143:14,18 144:11 145:10 155:20 156:7 161:8 174:5 180:17 193:2,19 230:3</p> <p>sorts 17:10 96:4 152:17</p> <p>sought 44:24 48:10</p> <p>sound 43:17</p> <p>sounded 80:7</p> <p>sounds 10:19 195:8 267:21</p> <p>source 17:2 37:5 62:2,4 255:20</p> <p>sources 31:8 45:5 59:24 71:24 91:18 128:4</p> <p>span 99:2</p> <p>spartalizumab 140:12 141:11,14</p> <p>speak 10:8,9 21:4 94:13 106:10 115:18 122:9 123:15 159:5 161:15 164:8,16 172:10 174:10 189:11 204:6 207:3 230:25 278:12 297:18 310:19 312:22</p> <p>speaker 231:23</p> <p>speakership 232:2</p> <p>speaking 21:9 91:10 123:17 232:11 261:9,15</p> <p>specific 13:24 27:9 31:25 42:22, 25 44:15 45:21 47:2 48:11 50:14 51:3 57:17 60:22 64:12 68:7 73:21 78:8,18 89:10 100:17 104:9,25 105:6 107:14 119:24 125:20 128:8,</p>	<p>13,14 131:12 143:10 149:18 150:8 151:16 153:6,21 156:17,23 161:3 163:23 164:16 166:18 169:15 187:14 191:18 192:4,10 202:10,21 204:6 206:18 211:12 213:22 237:15 272:11 311:21</p> <p>specifically 33:21 34:21 46:10 48:23 50:8 51:8 54:25 55:14,23 58:12,15,23 59:19,24 61:14 63:24 64:18 70:19 73:24,25 76:23 77:24 83:11 91:25 98:2 104:24 106:4 108:5 123:16 135:9 157:4 164:25 172:21 191:4 218:24 236:8 253:21 254:5,17 255:4 266:13 269:8 270:17</p> <p>specification 13:14</p> <p>specifics 35:10 103:8,17 105:17, 23 153:18 163:9</p> <p>spectrum 156:2 194:22</p> <p>speculate 53:19</p> <p>speculation 124:24</p> <p>speculative 119:21 123:11,20 124:4,14 125:5,9</p> <p>spelling 119:13</p> <p>spend 78:14,16</p> <p>spent 26:14 27:4,9,16 78:20, 23 79:9,13 80:19,25 81:9,10 116:9</p> <p>sphere 134:2</p> <p>spite 177:14</p>	<p>spoke 32:18</p> <p>spoken 23:20 90:3 91:8</p> <p>sponsor 129:3 185:15</p> <p>sponsored 218:8,10 231:23</p> <p>sponsoring 217:3</p> <p>sponsorship 225:10</p> <p>spot 114:14</p> <p>spread 113:14,22 114:2,10,15, 18</p> <p>stable 283:22</p> <p>stage 87:24,25 112:2,9,16,18 127:12 159:13,14,16 192:22 193:23 194:14 236:12 265:25 266:5 267:18,19 275:24 281:18 293:4 294:4</p> <p>staged 112:13</p> <p>stages 222:21</p> <p>staging 87:12,23 275:20</p> <p>stakeholders 310:4</p> <p>stance 120:21</p> <p>stand 297:9</p> <p>standard 112:23 115:2,16,20 131:5 135:12 142:24 145:5 168:13 173:24 246:10,14,15,18,21 272:25 273:7 278:25 279:14</p> <p>standardization</p>	<p>229:14</p> <p>standards 124:2 143:3 269:16</p> <p>standing 232:25</p> <p>stands 151:25 184:2</p> <p>start 20:7 54:21,25 96:21 99:16 102:16 103:21 117:25 122:20 154:16 159:7 187:16,22 192:18 209:17 228:7 299:18</p> <p>started 16:15 99:12,23 104:10 106:12 113:22 114:2 118:6 169:5,16,24 286:22</p> <p>starting 27:10 38:15 99:24 154:6 158:20 169:19 178:21 264:6</p> <p>starts 33:12 39:11</p> <p>state 8:18,25 43:22 74:10,12, 15 75:5,10,16 76:4 94:18 244:16 245:16,23 246:3</p> <p>stated 32:16 33:2,5 35:4 44:6 45:23 47:14 124:11 200:17 203:9 247:12 249:25 257:18 268:11, 20 269:6</p> <p>statement 44:20 46:10 59:9 69:3 121:15 123:21 124:5,6, 14 125:6,7,9,19 245:21 260:11 293:9 308:17</p> <p>statements 123:11 124:10 189:6,9 314:25</p> <p>States 187:24 291:21</p> <p>stating 252:8</p> <p>statistical</p>
---	--	---	---

135:4,8,17 143:2,11 202:4 204:17	stimulates 172:21	141:18 149:10,13,19,20 156:24 160:16 168:20, 21 169:6,15,16,19,20, 21,24 170:2 171:5 176:12,15,16,23,24 177:4,9,15,21 178:22 183:22 186:8,11,17,22 188:19 189:3,8 197:4,7, 10,15 198:4,7,15,22 199:4,13 204:8 212:21 214:23 215:7,8 219:6 221:18 238:7,18,22 239:4,16,24 240:8 244:25 245:9,19 246:2 247:4,9,15 250:22 251:10,19 252:2,9 253:6 264:4 266:25 267:15 268:23 272:19 280:17 282:14,19 283:16 287:21,22 288:13,15,24 289:11,24 290:2,4,6,11,12,14,19, 21 291:23 292:8,23,24 293:11,12,16,18,21,22 296:8,17 298:11,23 299:3,19 300:10,18 301:8,11,15 308:7,11, 12 311:13 312:8 313:16	submitted 16:20 24:22 28:2,4 53:21 54:9,19 62:10,24 88:6,20 123:5 134:12 183:10 184:4 189:9,10 196:18
statistically 143:24	stimulating 172:23 173:3		submitting 107:24,25 108:8 182:16 184:25 269:17
statistics 134:23 135:14,24 164:3,8,9 202:14 204:12	stimulatory 174:4		subscription 117:24
status 293:2 298:17,21 309:6	stomach 106:15,19		subsequent 97:11 163:21
Steinert 17:6 76:6,10	stop 118:3,4 168:11,20 215:13,16		subsequently 19:12
stenographer 8:6 15:2 25:10,12,16 29:6 38:8 69:21 70:3 82:8 126:3,9 157:20,25 158:7 165:12 170:14 173:2 215:17 216:4 222:4,6 223:17,19 226:11 263:11 280:5,11 291:7 301:24 303:23 305:5 306:7 315:10,16	stopped 157:16,19		subset 173:18,21
stenographic 8:7,9,14 69:22 70:4 126:4,10 158:2,8 215:18 216:5 280:6,12 315:11,17	stops 196:20		subsets 164:10
	Street 9:4		substance 158:15
	strength 32:6		succeeded 297:12
	strike 67:3 78:15 84:22 112:7 180:13 248:11 304:13		success 129:15 130:8 163:8,12 164:3 174:19 243:24 244:5,7 245:2,6,11,20 246:3,11,14,20,24,25 247:20 297:16 311:20 312:12
	strongly 200:6	subject 97:25 251:20	successful 128:23 129:8 135:2 162:14,15,24 164:13 169:17 170:3 176:17 177:8
step 144:11	structure 13:8	submission 26:17 128:20,22 138:25 139:3 149:24 151:9,25 152:4,8 179:13 180:2, 23 182:16,18,22 186:24 187:20 198:7 199:4 263:15,21 265:7 270:15 271:8 290:20 299:6,8	successfully 246:4
stepped 186:18	student 75:5,10		sufficient 31:7 67:14 253:15
stepping 186:19	students 145:24		suggest 242:4 294:9 311:14
steps 109:4 160:17 258:19 259:2,8	studied 266:20	submissions 129:6 151:22 152:2 178:5,10,11,14,23 179:6,19,23 180:16 181:13 182:25 183:7 185:19,20,23 187:10,16 189:12 197:15,18,21 198:22 220:5 264:8,12, 15,17,22 267:9 270:25	suggested 67:18 238:6,10 242:2, 10,14 243:13,20
steward 130:7	studies 104:18 106:16,19 135:22 137:2 167:8,10 175:9 186:3 187:3 205:20,22 220:11,13,19 222:16,20,24	submit 14:7 24:20 107:3 159:7 183:15,19 186:16,21	suggesting 242:20 254:10
stewards 130:4	study 16:22 23:10 31:21 34:22 42:5 44:13 47:8 49:2 52:22 57:11 59:24 60:3 62:3 63:25 64:21 67:18 72:20 83:11 89:14,16 103:10 108:9, 12 121:4,5 122:12,15 123:8 124:18 139:8	submits 184:7,14	
stickies 17:18,20,25			
sticky 19:2,5			
stimulate 172:19 173:13 208:21 210:8 211:25			

suggestion 242:23 suitable 261:22 262:2 275:4 279:19 summarized 59:6 summary 60:20 73:3 summer 20:10,11,13 22:2,4 75:2,7 76:12,25 77:9 Sunday 92:22 93:6 Super 98:9 supervision 95:25 175:10 support 32:9 42:18 49:16 56:21 57:21,25 58:4 59:14,25 60:9,16,25 62:8,11 64:3 65:8 123:22 132:6 134:13 225:5 227:24 supported 57:16 59:21 65:8 supporting 63:25 suppressive 205:22 suppressor 141:8 surgeon 115:6,9 surgery 112:14,15,21 113:11, 13,17,21 114:16 115:10 273:7,8,10,13,15 surgically 114:8,10 surrounding 214:6,9 survival 157:5 176:8 susceptible 167:3	suspect 199:8 225:22 suspected 169:11 Suzanne 236:17 sworn 8:19 syndrome 110:25 111:16,18 system 173:13 174:7 175:19 205:13,24 206:4 208:16,19,21 209:11 210:8,20 211:2,16 212:7 221:16 223:10 229:6 <hr/> <p style="text-align: center;">T</p> <hr/> T-CELL 208:7,20,22 T-CELLS 208:18,20 tab 197:11 199:13,20 table 241:24 284:2,10 tabs 197:10 199:11 taking 10:6 74:22 talk 135:20 174:2 202:20 204:15 275:19 talked 52:23 263:13 talking 100:14 111:14,15 125:9 147:21 149:14 150:24 214:20 261:6 282:7 299:6 talks 175:11 tallied 79:6	tally 24:7 78:22 79:17 81:9 target 143:10 175:19,20 207:8 209:9,11,24 221:15 targeted 209:10,13,23 310:8,14, 23 312:3,5 targeting 223:25 targets 209:21 211:14 task 44:23 tasks 27:3 taught 23:9 44:12 49:2 57:13 60:3 63:22,24 67:17 69:13 89:17 96:25 164:19 238:6,10,17 239:4,15,23 240:7 241:25 242:9,13,25 243:4,10 teach 242:4 teaching 242:20,21 team 28:8 87:4,7 91:11 106:25 107:3 136:19 178:17,19 180:22 184:14 218:15 236:10 teams 107:19 109:17 techniques 134:18 135:14 technology 11:14 telephone 21:9 telling 53:24 136:2 tells 116:20 Temple	94:23 95:2 term 64:6 116:9 137:22 139:8 189:19 190:10,12 195:6 201:4,8 204:17 205:12 213:15,21 214:7,15 215:10 216:13,15,16,18,21 248:2,8,13,19,23 249:11,14 250:3,7,16 254:12,24 273:16 terminologies 137:19 terminology 27:13 113:19 114:6 115:4 143:17 145:9 190:16 terms 142:21 144:19 162:20 test 110:6,11,22 154:25 157:4 169:10 193:6 311:18 tested 128:2,17 142:18 168:2 172:11 194:10 268:7 281:8,25 282:21 testified 8:20 48:23 123:9 270:23 testify 48:20 testifying 9:21 15:20 testimony 10:21,25 19:9 25:9 44:24 48:11 77:11 79:8 158:16 222:3 223:16 testing 110:19 111:4 127:22 155:21 156:3 161:25 162:25 167:14 169:3 193:2,20 194:4,5,6,8 215:6 283:5 286:22 287:2 tests 110:8 281:25 themselves 216:22
--	--	--	--

theoretical 150:25 271:13	thoughts 28:3,5	102:8 160:3	treating 96:5 99:9,12 102:13 104:22 106:2 166:24 175:8 195:11 199:25 200:9,23 201:10,12,16, 21 246:24 252:10,18 253:8 255:17 256:16,21 257:22,25 259:14 262:18 271:16 273:20 290:22 296:22 311:23 313:13
theoretically 151:19 152:24	thousand 26:9	tolerated 142:10	treatment 23:3 87:12,14 88:2 106:14 110:20 111:11 112:3,11,20 122:19 130:4 131:17,22 134:2 136:11 146:25 147:7,9, 10,11,16,25 148:6,19, 22 153:4,9,14,25 167:4, 5 168:13,18 169:8 176:20 190:22 193:24 195:7 200:2 201:24 205:6 214:11 244:24 245:18,25 251:19 258:20 259:3 274:6 275:5 281:19 284:6 285:11,23 287:12 295:15,25 298:14 311:8,9 312:14 313:4
theory 206:6	thousands 156:21	tons 151:5	
therapeutic 294:3 313:18	tie 310:9 311:4	tool 295:10 296:4	
therapeutics 262:22	tied 310:15	top 51:2 101:4 188:25 227:15 228:8,15	
therapies 191:13 205:17 268:22 278:15 279:7 310:8,14, 25 311:20,23 312:3,4 313:24 314:7	TILS 209:4	Topalian 236:17	
therapy 103:10 127:6 132:19 166:4 173:11,17 174:3, 4,5 189:22 205:12 208:22 209:2 210:4,7, 15,19 211:9,14 214:24 256:21 257:20,21 258:2 259:14 266:13 267:7 268:9,19,23 269:3,5 273:5 275:4,17 276:9, 24 278:4 279:19,21 292:10 297:14 310:24 311:21 312:5	time 9:9 19:14 22:23 23:18 26:22 27:16,23 39:6 40:24 41:11 47:22 52:7 64:10 70:20 72:24 73:11,22 75:10 76:9,11, 21 77:5 78:23 79:5,6 80:18 81:9 99:19,21,22, 23 103:2,14 104:11,19 105:15 116:10 152:10 163:5 164:20 169:5 172:2 195:5 200:9 213:5 214:12,13 217:21 219:21 222:7 223:20 229:20 235:15 245:23 246:17 247:16 266:9 268:5 273:2 286:2,6,16, 18 294:25 299:18 309:11,13	total 25:4 78:17 79:9,14	
thing 10:15 67:12 68:2,8 127:13,24 146:5 152:3 231:11 267:2	times 9:8 14:13 85:4 91:23 92:5,6 101:23 136:18 160:15 203:11,15 213:20 273:11 284:5	track 224:24 226:23	
things 14:22 42:16 43:6 45:6 46:13 49:17 50:6,15,18 51:8 55:3 87:25 96:8 113:9 114:9 117:5,17 118:7 127:12 137:18 148:21 163:18 175:3 190:17 195:4 196:8,10 202:16 208:10 217:6 242:22,23 285:7 301:2	timing 82:16	traditional 142:7	
thinking 218:24	tissue 114:15,19	traditionally 142:13	
thinks 121:7	titled 304:19 306:19	training 96:18,20,22 97:5,16,18, 20,21,22 135:4,6,9	
thought 34:18 42:2,17 44:21 58:3 62:21 71:21 83:5 199:12 235:7	today 9:21 10:21 15:20 20:21, 24 21:14,16 50:23 51:6 91:14 92:4,25 93:2 94:15 99:3 158:15 191:5,9 208:6 291:22	transcript 16:9	
	tolerable	transcripts 15:25 18:21	treatments 127:4 176:25 213:16 310:5
		transfer 115:5 208:7,20,22	tremelimumab 100:24
		travel 227:23 232:3,7,8	trial 28:7 65:20 83:23 97:11 105:5,13 106:12,13,23 107:4,6,18,21,24 108:2 109:20 116:5 121:23 122:5,14,17 123:5,7 124:7 127:10,14,15 128:22,23,25 129:8,14, 17,19,22 130:8,9,12,18, 22 131:8,24 133:5,24 134:21 135:2,3,10 136:21 137:5,16 138:8, 12,18 139:14 140:10, 13,16,21 141:11 142:2, 6,12,14,18,19,21,22 143:16,19,20,21 144:2, 9,12,18,20,22,23,25 145:7,11,18 146:7,8,10, 13,15,17,18,19,21,23

<p>147:3,16,23 148:7,15 149:2,4,7 150:13 151:6, 10,24 153:3,6,8,13,15, 19,23,24 154:5,7,16 155:4,10,15,21 156:4,9, 14,18,25 157:3,11 158:20 159:6,7,11,13, 17,23,24 160:2,4,15,19, 21,22 161:7,12,16,19, 25 162:23 163:2,3,4,8, 10,19,20,22,23,25 164:19,22 165:2,25 166:9,12,14,17,19,22, 24 167:13,20 168:2,6,7, 12,14,16 171:13,18,23, 25 172:4,6,9,11 174:9, 12,21,24 175:23,25 176:6,8 178:7,12 179:25 182:4 183:10,13 184:13,20,21,23 185:2, 5,9,11,13,14,15,17 187:8,13,16,19,22 191:6 195:12,17,18,21, 22 196:4,12,21,22 197:2,16 199:3,5,21 200:2,7,8,12 202:4,6, 11,14,21,23 203:5,12, 16,22,23 204:5,6,9,12, 14,23 206:2 210:17 216:11,15,24,25 217:4, 10 218:2,6,13,16,19,23, 24 219:4,22,25 222:13 223:13,25 224:3,6,25 225:5 230:17,23 245:9 252:25 253:4 263:21,25 264:13 265:18,21 266:8,10,15 267:5 268:6 269:25 270:16 271:5,18,19 272:6,13 273:3,24 274:19 275:5 276:9,15,16,17,25 277:4,9,19 278:3,20,22 279:3,25 280:25 281:11,22,24 282:3 283:3,6,11,24 287:2,18 288:7,19,20 289:6,13, 16 290:6 292:18 297:11,14,19 298:2,6, 10,13,17 302:10 308:19 311:18 313:15 314:5,6, 11,21</p> <p>trials 100:10,14 103:2,4,19, 23 104:2,7,8,15,21,25 105:4,8,10,19,25 106:6,</p>	<p>10 107:14 108:21 112:22 121:22 122:3 126:20,24 127:6,8,13, 17,23 128:5 130:25 131:4,11,13,14,16 132:6,12,16,24 133:8, 11,13,16,21 134:23 135:11,20 136:6,8,14, 19 137:7,9,13 138:19, 22 139:24 141:20 142:8 143:4,5,9,12 144:4,7,14 145:2 154:13 155:7,18, 25 156:19,22 159:14 160:6 162:13 163:13,17 164:4,6,8,11,13,15,16 177:25 178:25 180:16 182:11 183:2 189:13 190:25 191:4,19 196:16 202:20 203:8 205:5 207:15 208:5 210:13,16 217:7,13,18,23,24 218:9 219:8,16,19 220:22,25 221:21,24 222:9,11 223:5,22 225:6,11,19 227:14 229:19 262:22 269:4,11 271:2 279:22 286:22 297:24 313:20 314:2</p> <p>trouble 157:16</p> <p>true 16:7 41:2 54:7 176:9 202:19 204:4,21</p> <p>truth 9:25 10:2</p> <p>Tuesday 94:3</p> <p>tumor 109:22 172:20 173:4 182:5 189:20 193:7,10, 16 194:7 273:8 281:8 295:9</p> <p>tumors 157:3 167:2 191:19 204:11 292:13 294:11, 17</p> <p>turn 36:9,15 38:14 80:15 220:7 227:6 228:6,12 233:2 247:23 262:25 265:11 292:20 308:4 309:15</p>	<p>Twitter 196:22</p> <p>two-thirds 265:12 291:19</p> <p>type 11:17,21 120:19 140:23 141:13 148:21 163:19 172:17 173:8,9 182:5 191:24,25 208:8 209:7, 12 210:5,9,24 211:15 212:5 311:21</p> <p>types 27:3 104:13 159:17 189:23 206:24 207:24 209:13,19 273:18 295:6,9</p> <hr/> <p>U</p> <p>U.S. 179:2,3</p> <p>Uh-huh 34:10 65:11 110:17 112:5 120:24 122:13,21 123:2 124:15,19 125:2 133:14 134:9 136:24 138:10 145:20 148:10 154:21 162:10,12 164:17 169:22 171:19 180:5,7 181:25 182:7, 19 186:10 188:9 195:19 196:23 199:9 202:12,17 206:16 207:5,20 208:11,13,17 210:2 218:11 219:17 225:3 251:15 255:24 259:12 265:3 295:20 300:24 301:3</p> <p>ultimately 138:14 166:14 168:11</p> <p>unbiased 57:6</p> <p>uncommon 219:18</p> <p>undercount 220:21</p> <p>undergo 120:11 273:15</p> <p>underlying 33:6 134:16 188:4,13</p>	<p>underneath 198:22</p> <p>understand 9:20,23 14:11,16,18 15:9,19,23,24 22:22 27:12 33:11 37:7 39:15 46:15 52:9 53:12,20 55:5,10 71:6 84:11,17 108:15 111:6 136:2 145:22 147:4,19 148:11 149:24 182:3 184:11 185:18 214:6,24 242:6 248:2,7,18 249:10 250:2,8 251:8,18 254:23 255:13 257:13 262:16 266:7 267:2,4 268:24 269:13,18 271:19 272:21,23 278:20 285:6 292:16</p> <p>understandable 10:10</p> <p>understanding 13:23 14:4,6 15:14,15 38:23 48:13 54:2,3 89:14 90:6 133:17 153:6 174:13,15 201:5 214:14 216:20 255:21 258:4,13,15 259:7 264:11</p> <p>understandings 206:18</p> <p>understands 258:19 259:2</p> <p>understood 56:25 107:15 153:11</p> <p>unexpected 308:12</p> <p>unilaterally 158:12</p> <p>unintelligible 25:8 222:2 223:15</p> <p>United 187:24 291:21</p> <p>university 54:20 74:11 75:11 94:18,24 95:3 224:9 225:17 227:13 228:23 230:21,25 293:23 303:3</p> <p>unmet</p>
---	--	--	---

309:20,25 310:2 311:6, 7,10 315:4,22	189:16,19	159:2,9,15	216:22 242:8,11 249:15 254:20
unreceptible 113:18 274:8 293:3	vaguely 12:25	Vogelstein 235:19	work 12:2,13 15:11 20:5 21:19 24:19 25:4,14,25 26:2,7,11 32:12 34:25 35:16 36:5 73:20 74:24 81:15 116:24 119:20 145:14 171:12 174:6 177:24 183:2 189:8 191:24 230:9,15 236:3 262:23
unremovable 114:16	valid 151:3	W	worked 12:21 13:4 23:24 26:13 28:9 95:14,16 171:15, 17 235:13,18,21,24 236:13,16
unstable 82:5,10 157:3 204:11	valuable 131:2 292:11	wait 200:11 289:19	workflow 184:22
unstated 266:19	variable 120:9	wanted 23:5 52:9 66:24 69:2 70:22 169:13 182:17 231:21	working 26:4 80:19 95:24 96:6, 11 221:21
unusual 276:17	variables 108:17,20 148:24,25 149:6,8 151:5,10,24	watch 98:19 145:25	world 181:10 201:14
Uptodate 82:23	varied 137:19	ways 81:24 146:16 147:14 148:5,13 182:8 185:22, 25 194:6 196:9 207:8 216:17 274:7	worth 81:3 311:18
USPTO 16:10	varies 26:8 184:19 185:10	weak 146:8	worthwhile 130:11
usual 138:22	vary 163:8	website 16:10 178:3 183:20 197:19,23 225:9 226:19,21,22 227:8,25	writ 132:23 133:4,20
utilization 89:10 105:16	vast 112:17	week 88:18,21 92:9	write 69:3 107:3 220:9 242:11 247:25 248:6,14 256:18 299:14 308:6 310:7
utilize 41:8 50:17 87:15 136:3 150:9 194:6 201:24 203:18,19 225:18 254:16 256:3	VEGF 167:15 209:23 212:13	well-defined 203:9	writing 107:5,18 269:24
utilized 30:24 41:10,20 47:12 62:5,16 64:11 72:17 210:18 212:2,8 243:6 246:15,21 248:21 249:13 288:17	verify 54:7 78:5	well-established 291:25	written 106:16 150:17,21 152:23 154:3 243:20 270:4 296:20
utilizing 58:18 81:25 102:25 103:5 106:13 142:25 218:3 222:9 223:7	versa 41:14	well-known 205:18	wrong 257:8
	version 198:7 264:24	West 9:3	wrote 18:8 19:7 27:19 28:3 46:11 105:5 106:11,13, 22 233:5 242:8 248:18 254:10
	versus 121:6	widespread 104:7	
	vessels 166:25	wondering 33:19	
	vice 41:14	word 162:7 214:4,6,9,10 239:19 240:3,12 241:13,20 295:2	
	vice-president 294:4	words 27:24,25 162:21 184:2	
	video 86:25		
	virus 210:4,7,15,19 211:24		
	vitro 157:9 158:19,25 159:2, 8		
	vivo		
V			
vaccine 171:6 172:18 173:9,15, 17 174:4,17,24 175:22 176:2,3 223:12,25 224:6			
vaccines 173:20 174:6 205:23 206:10			
vague 125:15 128:24 148:9			

Y

year

118:3

years

73:16 74:21 75:17 95:2

96:16 98:22,23,25

110:24 146:3 174:16,20

225:12,13,14,23 237:10

255:17 262:18 299:19

yesterday

94:2

York

8:18 9:4 95:7

Z

Zoom

86:25 92:15 93:13

94:11