

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

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ILLUMINA, INC.,

Petitioner,

vs.

THE TRUSTEES OF COLUMBIA UNIVERSITY  
IN THE CITY OF NEW YORK,

Patent Owner.

-----x

IPR2018-00291 IPR2018-00318

IPR2018-00322 IPR2018-00385

IPR2018-00797

CONTINUED VIDEOTAPE DEPOSITION

STEVEN M. MENCHEN, PH.D.

New York, New York

January 15, 2019

9:08 a.m.

Reported by:

ERICA L. RUGGIERI, RPR

Illumina Ex. 1113  
Illumina v. Columbia  
IPR2018-00291, -00318,  
-00322, -00385, and -00797

January 15, 2019

9:08 a.m.

Videotape Deposition of  
STEVEN M. MENCHEN, PH.D., held at  
the offices of Venable Fitzpatrick,  
1290 Avenue of the Americas, New  
York, New York, pursuant to Notice,  
before Erica L. Ruggieri, Registered  
Professional Reporter and Notary  
Public of the State of New York.

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MARCUS BIRCH, Illumina

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22 FLOYD ROMESBERG, Scripts Research

Institute

23 DEVERELL WHITE, Videographer

24

25

1 STEVEN MENCHEN, Ph.D.

2 THE VIDEOGRAPHER: We are  
3 going on the record at 9:08 a.m. on  
4 January 15, 2019.

5 This is media unit one, Volume  
6 2 of the continued video deposition  
7 of Dr. Steven Menchen.

8 S T E V E N M. M E N C H E N,  
9 called as a witness, having been  
10 previously duly sworn by a Notary  
11 Public, continued to be examined and  
12 testified as follows:

13 EXAMINATION BY

14 MR. REINES:

15 Q. You understand you are  
16 still under oath?

17 A. That's right.

18 Q. Since the deposition began  
19 have you discussed the proceedings  
20 of the deposition with counsel?

21 A. No.

22 Q. Would you please put in  
23 front of yourself Exhibit 2108.

24 MR. SCHWARTZ: Which is that?

25 MR. REINES: It's the list of

1 STEVEN MENCHEN, Ph.D.

2 exhibits considered.

3 A. Yeah.

4 Q. Okay. And before the list  
5 of documents considered was  
6 finalized did you review it to  
7 ensure that it was accurate?

8 A. The list?

9 Q. Yeah.

10 A. That this was accurate?

11 Q. Yes.

12 A. Oh, yes.

13 Q. You don't list  
14 Dr. Romesberg's declaration on this  
15 list. Did you review that before  
16 you submitted your declaration?

17 A. No, not before I submitted  
18 my declaration.

19 Q. At the time you formed your  
20 opinions in this matter and  
21 submitted your declaration were you  
22 aware of any disagreements or any --  
23 let me say this.

24 At the time you formulated  
25 your opinions and submitted your

1 STEVEN MENCHEN, Ph.D.

2 declaration was there anything in  
3 Dr. Romesberg's declaration that you  
4 thought was inaccurate or wrong in  
5 any way?

6 A. Before I formed the  
7 opinions?

8 Q. When you submitted your  
9 declaration.

10 A. No. I hadn't -- I hadn't  
11 looked at his declaration.

12 Q. I'd like to show you what's  
13 been marked as Exhibit 1010. This  
14 is the '869 patent.

15 A. Okay.

16 Q. And you recognize this as  
17 one of Dr. Ju's patents in the same  
18 patent family?

19 A. Yeah, I recognize the  
20 patent.

21 Q. And this is one of the  
22 patents that you've looked at in  
23 preparation for this deposition; is  
24 that correct?

25 A. Is it -- Exhibit 1010. No.

1 STEVEN MENCHEN, Ph.D.

2 Q. You did review this in  
3 preparation for the deposition?

4 A. No, I -- no, I didn't.

5 Q. When you say you recognize  
6 the patent, where do you recognize  
7 it from?

8 A. It has the same title as  
9 the -- well, similar titles to the  
10 patents that I did review.

11 Q. And you are aware that  
12 there's patents in the same family  
13 of Ju -- of Ju patents that were  
14 invalidated previously?

15 A. Yeah, I'm aware of that.

16 Q. I'd like to direct you to  
17 the claims. If you'd look at claim  
18 12, please, and read that to  
19 yourself.

20 A. Okay.

21 Q. And if you could look at  
22 claims 15 and 16 which are, you  
23 know, are dependent claims.

24 A. Okay.

25 Q. Please identify any

1 STEVEN MENCHEN, Ph.D.

2 meaningful differences between the  
3 claim subject matter of the '869  
4 patent that you just reviewed and  
5 the Ju patents that are at issue in  
6 this proceeding?

7 MR. SCHWARTZ: Objection to  
8 scope.

9 Q. If you can.

10 A. That wasn't one of the  
11 things that I was asked to -- to  
12 develop an opinion on for this  
13 deposition.

14 Q. Are you able to identify  
15 any meaningful difference whatsoever  
16 at all?

17 A. I would have to study it.

18 Q. You can look at it to your  
19 heart's delight right now.

20 A. Well, certainly the words  
21 are different.

22 Q. Yeah, my question isn't  
23 about the words being different.  
24 The question is are there any  
25 meaningful difference in



1                   STEVEN MENCHEN, Ph.D.  
2           technological content between claims  
3           12, 15, 16 of the '869 patent and  
4           the Ju patent claims which you've  
5           studied and analyzed for this  
6           proceeding?

7                   MR. SCHWARTZ:  Objection,  
8           form.  Objection, scope.

9                   A.     I would have to look at  
10          them side by side.

11                  Q.     Okay.  Why don't you pull  
12          out the '985 patent, which is  
13          Exhibit 1075, which you have.

14                  A.     And what would you like me  
15          to do?

16                  Q.     So actually, we will look  
17          at -- first of all, you have the  
18          '869 patent on one hand?

19                  A.     Right here.

20                  Q.     I'd say look at claims 28  
21          and 31 as well.

22                  MR. SCHWARTZ:  Objection,  
23          scope.

24                  Q.     This should be familiar  
25          subject matter.  And then -- so what

1 STEVEN MENCHEN, Ph.D.

2 I'd like you to do is -- why don't  
3 you put the '852 patent next to it,  
4 please. It's the '852. It's 1001.

5 MR. SCHWARTZ: I'm going to  
6 object to this line of questioning,  
7 scope.

8 Q. So the question is can you  
9 identify anything in the '852  
10 patent, claim 1, that is  
11 meaningfully different from what's  
12 claimed in the '869 patent?

13 MR. SCHWARTZ: Objection,  
14 form. Objection, scope.

15 A. I would need to study this.  
16 I don't think I could do this --  
17 answer your question just from  
18 sitting here. I would need to study  
19 it.

20 Q. Can you identify anything  
21 whatsoever at all that you believe  
22 would make the '852 patent claims  
23 more inventive relative to the prior  
24 art as compared to what's claimed in  
25 the '869 patent?

1 STEVEN MENCHEN, Ph.D.

2 MR. SCHWARTZ: Same objection.

3 Plus objection, legal conclusion.

4 A. I can't develop an opinion  
5 on that here.

6 Q. Can you identify anything  
7 though?

8 MR. SCHWARTZ: Same  
9 objections.

10 A. I don't want to try to  
11 identify anything that could be  
12 inaccurate. I would have to study  
13 it.

14 Q. What would you need to  
15 study?

16 A. I would need to read these  
17 things over.

18 Q. What are these things?

19 A. These -- these claims and  
20 the specs of each patent.

21 Q. The specs are the same.  
22 You've studied the specs for  
23 eight -- eight, nine days before you  
24 came here.

25 A. Well, I would need to study

1 STEVEN MENCHEN, Ph.D.

2 the specifications with regard to  
3 differences in the claims.

4 Q. Even though the  
5 specifications are the same?

6 A. The claims read on the  
7 specifications so I would have to  
8 study them, each -- each of the  
9 claims with regard to the  
10 specifications.

11 Q. Are you able to read the  
12 claims on the specification for the  
13 '852 patent?

14 A. I'm sorry, could you repeat  
15 that?

16 Q. You just said the claims  
17 read on the specification. Do you  
18 recall that testimony?

19 A. That's correct.

20 Q. And with respect to the  
21 '852 patent are you capable of  
22 reading claim 1 onto the  
23 specification?

24 MR. SCHWARTZ: Objection,  
25 scope.

1 STEVEN MENCHEN, Ph.D.

2 A. I'm unable to do that right  
3 now without looking at the claim and  
4 looking at the specifications.

5 Q. Why don't you look at the  
6 claim and specification. Obviously  
7 the claim and specification of the  
8 Ju '852 patent is something you are  
9 familiar and studied in preparation  
10 for today. So why don't you tell me  
11 which DNA polymerase from claim 1 of  
12 the '852 patent, where the  
13 specification reads on that?

14 MR. SCHWARTZ: Objection,  
15 scope.

16 A. I mean I would have to look  
17 through the whole specification and  
18 the citations to make that judgment.

19 Q. To state how the  
20 embodiments of the '852 patent do or  
21 don't lead on the claims of the Ju  
22 patents. That's something that  
23 you'd have to read everything in the  
24 specification for and the citations?

25 A. Yeah.

1 STEVEN MENCHEN, Ph.D.

2 Q. Do you have any basis to  
3 say that the Ju patents are  
4 patentably distinct relative to the  
5 '869 patent?

6 MR. SCHWARTZ: Objection,  
7 form. Objection, legal conclusion.  
8 Objection, scope.

9 A. That's not something I was  
10 asked to -- to develop an opinion on  
11 for this deposition.

12 Q. Do you have any opinion?

13 A. No.

14 Q. Did you ever ask -- did you  
15 ever do anything to attempt to  
16 access the Romesberg declaration to  
17 read it when you were developing  
18 your opinions responding to that  
19 declaration?

20 A. I'm sorry?

21 Q. Did you ever do any -- did  
22 you ever take any steps to attempt  
23 to access the Romesberg declaration  
24 when you were preparing your  
25 opinions in response to the petition

1 STEVEN MENCHEN, Ph.D.

2 and declaration?

3 A. You mean for my  
4 declaration?

5 Q. Yeah.

6 A. No. I had no -- I had no  
7 access to that.

8 MR. SCHWARTZ: I'm going to  
9 object. It mischaracterizes  
10 Dr. Menchen's declarations.

11 Q. Did you think it would be  
12 important for you in preparing  
13 your -- actually, let me -- let's --  
14 I'd like to show you what's been  
15 marked as Exhibit 1015.

16 Do you recognize this as the  
17 Dower patents at issue in these  
18 proceedings?

19 A. Yes, I do.

20 Q. And did you read this and  
21 familiarize yourself with it?

22 A. Yes, I did.

23 Q. And you understood you'd be  
24 asked questions about this today?

25 A. I understood I'd be asked

1 STEVEN MENCHEN, Ph.D.

2 questions about this patent with  
3 regard to my declaration.

4 Q. And you did your best to  
5 prepare yourself for the deposition  
6 so you could answer such questions?

7 A. With regard to my  
8 declaration, yes.

9 Q. When you were -- in the  
10 1993 were you familiar with Affymax?

11 A. Yes, I was.

12 Q. And were you familiar with  
13 the technology described in the '839  
14 patent from Affymax?

15 A. Which technology?

16 Q. What's described in the  
17 '839 patent?

18 A. You are talking about the  
19 synthesis of the DNA on a -- on a  
20 chip?

21 Q. Is there any technology  
22 within the Dower patent that was  
23 familiar to you when you read the  
24 patent for purposes of this project?

25 A. I knew about it. I



1 STEVEN MENCHEN, Ph.D.

2 wouldn't say that I necessarily  
3 could practice it or could describe  
4 it in detail.

5 Q. If you turn to column 25,  
6 please. Do you have that in front  
7 of you?

8 A. Yes, I do.

9 Q. And do you see at line 45  
10 of the reference to Prober?

11 A. Yes, I see that.

12 Q. And do you see the  
13 statement at line 50, that "small  
14 blocking groups," and then there's a  
15 list of them? Do you see that?

16 A. I see that.

17 Q. Are you familiar with those  
18 blocking groups?

19 A. I know about those blocking  
20 groups.

21 Q. How do you know about them?

22 A. Those are blocking groups  
23 that are used in various, you know,  
24 doing synthetic transformations,  
25 especially peptide synthesis.

1 STEVEN MENCHEN, Ph.D.

2 Q. Are you familiar with the  
3 Affymax technology being described  
4 in column 25?

5 A. Are you talking about the  
6 whole column?

7 Q. I mean generally, not every  
8 single line. Just when you were  
9 familiar with Affymax in the '90s,  
10 were you familiar with the  
11 technology that's generally being  
12 described in column 25?

13 MR. SCHWARTZ: Objection,  
14 form.

15 A. I knew that they practiced  
16 photolithography to grow DNA and  
17 peptides on chips. I didn't know  
18 the specifics of it.

19 Q. Did you know that Affymax  
20 was working with reversible  
21 terminators in the 3' position?

22 MR. SCHWARTZ: Objection,  
23 form.

24 A. You are asking if I knew  
25 that in the '90s?

1 STEVEN MENCHEN, Ph.D.

2 Q. Yes.

3 A. No, I didn't know that.

4 Q. Sitting here now are you  
5 surprised to see that Affymax is  
6 working with reversible terminators  
7 in small blocking groups in the  
8 1990s time period?

9 A. I'm sorry, could you repeat  
10 that?

11 Q. Sitting here now are you  
12 surprised to see that Affymax was  
13 working with reversible terminators  
14 in small blocking groups in the  
15 1990s time period?

16 A. What do you mean by small  
17 blocking groups?

18 Q. Do you see where it says  
19 small blocking groups at line 50?

20 A. I see that.

21 Q. Those.

22 A. So those blocking groups.  
23 No, I didn't know that.

24 Q. Are you surprised to see  
25 that they were working with that

1 STEVEN MENCHEN, Ph.D.

2 technology?

3 A. No, I'm not surprised.

4 Q. Do you have an opinion on  
5 what different blocking groups fall  
6 into the category of small blocking  
7 groups defined by -- or referenced  
8 by Dower at column 25, line 50?

9 MR. SCHWARTZ: Objection,  
10 form. Objection, scope.

11 A. Yeah. I wasn't -- that --  
12 that wasn't one of the things I  
13 studied for the -- for the  
14 deposition or the declaration.

15 Q. Do you know what small  
16 blocking groups a person of ordinary  
17 skill in the art reviewing Dower  
18 would understand is within the scope  
19 of what's disclosed in column 25?

20 MR. SCHWARTZ: Same  
21 objections.

22 A. Yeah. I don't  
23 understand -- I don't understand the  
24 question. Could you repeat the  
25 question?

1 STEVEN MENCHEN, Ph.D.

2 Q. Do you have an opinion as  
3 to what small blocking groups a  
4 person of ordinary skill in the art  
5 reviewing Dower would understand was  
6 within the scope of what is  
7 disclosed in column 25?

8 MR. SCHWARTZ: Same  
9 objections.

10 A. I don't have an opinion on  
11 that.

12 Q. And you recognize  
13 Exhibit 1013 as the Tsien reference?

14 A. Yes, I do.

15 Q. And you testified  
16 previously that you were generally  
17 familiar with the Tsien reference  
18 from before you were involved in  
19 this project; is that right?

20 A. I'd -- I'd heard of the  
21 Tsien reference but I wasn't really  
22 familiar with it.

23 Q. Did you ever meet  
24 Dr. Tsien?

25 A. No.

1 STEVEN MENCHEN, Ph.D.

2 Q. In the 1990s were you aware  
3 of what was going on at SRI in the  
4 field of -- of sequencing?

5 A. No.

6 Q. If you turn to page 24,  
7 please. You see the reference at  
8 line 29 to allyl ethers?

9 Do you see that?

10 A. I see that.

11 Q. You have a general  
12 familiarity to the Tsien reference  
13 from your work in this matter?

14 A. For the deposition, yes.

15 Q. Do you see where it says at  
16 line 33, "these protecting groups"?  
17 At line 33 or so.

18 A. Yes, I see that.

19 Q. And you understand that  
20 that reference includes the  
21 reference to allyl ethers?

22 A person of ordinary skill in  
23 the art reading Tsien would  
24 understand that one of the  
25 protecting groups that he's

1 STEVEN MENCHEN, Ph.D.

2 promoting is the allyl ethers; is  
3 that correct?

4 A. The protecting groups as an  
5 open-ended set of allyl ethers, yes.

6 Q. So he says these protecting  
7 groups which are stable to the  
8 conditions used in the synthesis of  
9 dNTP analogs and then the sequencing  
10 incorporation steps, you understand  
11 that's referring to allyl ethers as  
12 a person of ordinary skill in the  
13 art would understand this  
14 disclosure?

15 MR. SCHWARTZ: Objection,  
16 form.

17 A. Yeah, this refers to allyl  
18 ethers.

19 Q. And then it says here that  
20 "Advantages over groups cleavable by  
21 base hydrolysis, deblocking occurs  
22 only when the specific deblocking  
23 reagent is present and premature  
24 deblocking during incorporation is  
25 minimized."

1 STEVEN MENCHEN, Ph.D.

2 Do you see that description of  
3 the protecting groups?

4 A. I see that.

5 Q. And there Tsien is  
6 referring to allyl ethers; is that  
7 correct? That's how a person of  
8 ordinary skill in the art would  
9 understand this disclosure?

10 MR. SCHWARTZ: Objection,  
11 form.

12 A. So a person with ordinary  
13 skill in the art would understand  
14 that the -- that allyl ethers in  
15 general had some advantages, that  
16 they wouldn't be cleaved by base  
17 hydrolysis when deblocking occurs.

18 Q. What's that?

19 A. That allyl ethers wouldn't  
20 be cleaved by base hydrolysis.

21 Q. I'm not asking what you  
22 think in terms of the technology.  
23 My question was a person of ordinary  
24 skill in the art when they are  
25 reading about the protecting groups



1 STEVEN MENCHEN, Ph.D.

2 with the qualities such as being  
3 cleavable and being stable, they  
4 would understand that Tsien is  
5 referring to allyl ethers with  
6 respect to that, correct?

7 MR. SCHWARTZ: Objection,  
8 form.

9 A. They wouldn't understand  
10 that.

11 Q. They wouldn't understand  
12 that, okay. Do you see where it  
13 says, "These protecting groups" at  
14 the beginning of the sentence?

15 A. I see that.

16 Q. And do you recall just a  
17 few minutes ago you acknowledged  
18 that a person of ordinary skill in  
19 the art would understand that refers  
20 to allyl ethers? Do you recall that  
21 testimony?

22 MR. SCHWARTZ: Objection,  
23 form.

24 Q. It's not asking you  
25 whether --

1 STEVEN MENCHEN, Ph.D.

2 A. So it refers to the word  
3 "allyl ether" but Tsien doesn't  
4 describe allyl ethers as protecting  
5 groups in this paragraph.

6 Q. I specifically asked you  
7 not to -- not to give an answer on  
8 the substance. I was just asking  
9 you if you recalled a few minutes  
10 ago that you testified that when  
11 Tsien refers to these protecting  
12 groups a person of ordinary skill in  
13 the art would include -- would  
14 understand that includes allyl  
15 ethers.

16 Do you remember generally  
17 testifying to that?

18 A. Yes, I said that.

19 Q. And are you now contesting  
20 that testimony or do you stand by  
21 that testimony?

22 MR. SCHWARTZ: Objection,  
23 asked and answered.

24 A. Yeah, I'll stand by that  
25 testimony.

1 STEVEN MENCHEN, Ph.D.

2 Q. Okay. All right. Is -- is  
3 there anything in the Ju's -- Ju's  
4 disclosure that would enable the use  
5 of allyl groups for the claimed  
6 inventions of the Ju patents that's  
7 not disclosed in the Tsien patent?

8 MR. SCHWARTZ: Objection,  
9 scope. Objection, requires legal  
10 conclusion.

11 Q. Patent document. It's  
12 actually a PCT application.

13 A. Tsien doesn't describe  
14 allyl ethers in this document.

15 Q. Anything else that you can  
16 identify?

17 A. Could you -- based on what?  
18 Could you repeat the question?

19 Q. Is there anything in Ju's  
20 disclosure that enables the use of  
21 allyl groups for -- used in the  
22 claimed inventions of the Ju patents  
23 that's not included in the Tsien  
24 patent?

25 MR. SCHWARTZ: Same

1 STEVEN MENCHEN, Ph.D.

2 objections.

3 Q. You mentioned no disclosure  
4 of allyl ethers. Is there anything  
5 else that you can identify?

6 A. Tsien doesn't disclose  
7 allyl ethers.

8 Q. Is there anything else you  
9 can identify?

10 A. I wasn't asked to form an,  
11 you know, to form an opinion on  
12 that. I would have to go through  
13 and reread Ju with respect to -- to  
14 Tsien.

15 Q. So today you can't answer  
16 that question; is that correct?

17 A. Which -- the question is,  
18 is there anything else?

19 Q. Yes.

20 A. I can't answer that  
21 question.

22 Q. Did you -- is there  
23 anything in the Ju disclosure that  
24 enables the use of the claimed  
25 inventions of the Ju patents beyond

1 STEVEN MENCHEN, Ph.D.

2 what's disclosed in Dower?

3 MR. SCHWARTZ: Same

4 objections. Objection, scope.

5 Objection, legal conclusion.

6 A. I don't quite -- you are  
7 going to have to repeat the elements  
8 of that question.

9 Q. Is there anything in the Ju  
10 disclosure that enables the use of  
11 the claimed inventions of the Ju  
12 patents beyond what's disclosed in  
13 Dower?

14 MR. SCHWARTZ: Same  
15 objections.

16 Q. You are looking a little  
17 surprised. Is that something you  
18 have an opinion on? Can you  
19 identify anything?

20 A. Well, I'm trying to reframe  
21 that question in my -- in my mind  
22 to, yeah, to understand. So you are  
23 asking if there's anything in Ju  
24 that's -- okay, could you repeat  
25 that one more time.

1 STEVEN MENCHEN, Ph.D.

2 Q. Is there anything in Ju's  
3 disclosure that enables the claimed  
4 inventions of the Ju patents beyond  
5 what's disclosed in Dower?

6 A. Well, the cleavable linker.

7 Q. And what cleavable linker  
8 is disclosed in -- in -- well, is  
9 there anything else that you can  
10 identify?

11 A. I would have to -- yeah, I  
12 would have to reread.

13 Q. Are you prepared to answer  
14 that question today?

15 A. I don't believe that -- I  
16 don't think I'm prepared to answer  
17 that question today.

18 Q. Okay. In -- if you go to  
19 your declaration, which has been  
20 marked as 2114, and if you turn to  
21 32.

22 A. Page 32?

23 Q. Yeah, please.

24 A. Okay.

25 Q. Now, I'm going to start

1 STEVEN MENCHEN, Ph.D.

2 with -- and then pull out Kamal,  
3 which is Exhibit 1037. Should be  
4 somewhere in front of you. Some  
5 Tetrahedron Letters.

6 A. Oh, yes, I do.

7 Q. Do you have that in front  
8 of you?

9 A. Yes, I do.

10 Q. Okay, thanks. Now Ju  
11 refers to Kamal a few times,  
12 correct?

13 A. That's correct.

14 Q. What is your understanding  
15 that is Ju's purpose for directing  
16 the reader to Kamal?

17 MR. SCHWARTZ: Objection,  
18 scope.

19 A. It was to show that it's  
20 possible to cleave a propenyl group  
21 from an alcohol in a non-SBS  
22 condition or format.

23 Q. Why would Ju direct the  
24 reader to a teaching of cleaving an  
25 alcohol from an allyl group that's

1 STEVEN MENCHEN, Ph.D.

2 not in sequencing by synthesis  
3 context, why would that be relevant  
4 to a reader?

5 MR. SCHWARTZ: Objection,  
6 form.

7 A. I can't really comment on  
8 why Ju would do that.

9 Q. Is there any utility for  
10 the reader of the Ju patent to look  
11 at the Kamal disclosure?

12 MR. SCHWARTZ: Objection,  
13 form.

14 A. Just to verify that the  
15 citation is correct.

16 Q. But why would -- when you  
17 say the citation is correct, what --  
18 what do you mean by that?

19 A. That what Ju said -- that  
20 the citation that Ju cites is -- is  
21 useful for cleaving propenyl ethers.

22 Q. What would that -- why  
23 would a person of ordinary skill in  
24 the art -- in the art care about  
25 Kamal if they are reading the Ju



1 STEVEN MENCHEN, Ph.D.

2 patent?

3 MR. SCHWARTZ: Objection,  
4 scope. Objection, form.

5 A. Just to look at the  
6 citation. Anyone would do that.

7 Q. For what purpose though?

8 MR. SCHWARTZ: Same objection.

9 A. For what purpose. Yeah,  
10 that's what they would do.

11 Q. Is Kamal relevant to Ju's  
12 invention?

13 MR. SCHWARTZ: Objection,  
14 scope. Objection, form.  
15 Objection, legal conclusion.

16 A. So I was only asked to --  
17 to determine if in Ju's invention if  
18 there was prior art cited by Ju  
19 that -- that read on the claims. So  
20 I wasn't asked to determine anything  
21 like that, form an opinion on  
22 anything like that.

23 Q. Do you have any opinion as  
24 to whether a person of ordinary  
25 skill in the art, whether or not

1 STEVEN MENCHEN, Ph.D.

2 they would learn about the cleaving  
3 of alcohol from an allyl group from  
4 Kamal?

5 MR. SCHWARTZ: Objection,  
6 scope. Objection, form.

7 Q. As relevant to the  
8 sequencing by synthesis.

9 MR. SCHWARTZ: Objection,  
10 scope.

11 A. Yeah, I think you are  
12 asking -- you are going to have  
13 to -- could you repeat that question  
14 one more time?

15 Q. Sure. Would a person of  
16 ordinary skill in the art in the  
17 year 2000 reviewing Kamal's article  
18 in the Tetrahedron Letters journal  
19 learn that allyl groups can be  
20 cleaved from alcohol in the context  
21 of sequencing by synthesis? Do you  
22 have an opinion one way or the other  
23 on that?

24 A. They would learn that  
25 Kamal's method wouldn't work.

1 STEVEN MENCHEN, Ph.D.

2 Not -- not generally.

3 Q. Why would Ju direct the  
4 reader to something that wouldn't  
5 work for the purpose of Ju's goal?

6 MR. SCHWARTZ: Objection,  
7 scope. Objection, form.

8 A. Yeah, I don't -- I really  
9 can't comment on why -- why Ju did  
10 that, why he did certain things.

11 Q. Do you have any explanation  
12 at all as to how Kamal is relevant  
13 to Ju's invention?

14 MR. SCHWARTZ: Objection,  
15 form. Objection, scope.

16 A. Yeah, I wasn't asked to  
17 form an opinion on anything like  
18 that.

19 Q. Do you have any opinion?

20 A. No, not really.

21 Q. Would a person with skill  
22 in the art be able to adapt to --  
23 the teachings of Kamal to sequencing  
24 by synthesis in the year 2000?

25 MR. SCHWARTZ: Objection,

1 STEVEN MENCHEN, Ph.D.

2 form. Objection, scope.

3 A. I don't think so.

4 Q. Is that something that you  
5 have a developed opinion on?

6 A. I discuss that in my  
7 declaration. So whatever is in the  
8 declaration.

9 Q. Does -- show me where Ju  
10 explains how to adapt the teachings  
11 of Kamal to DNA sequencing.

12 MR. SCHWARTZ: Objection,  
13 scope.

14 A. That -- that's not  
15 something that I was asked to  
16 evaluate.

17 Q. Would a person of ordinary  
18 skill in the art reviewing the Kamal  
19 reference learn anything relevant to  
20 sequencing by synthesis or -- as  
21 described in the Ju patent?

22 A. As described in the Ju  
23 patent. I don't -- I don't really  
24 have an opinion on that.

25 Q. Do you have an

1 STEVEN MENCHEN, Ph.D.

2 understanding why Ju -- is there any  
3 reference cited in Ju patent that  
4 you think is relevant to the Ju  
5 inventions?

6 A. Yeah, that's not something  
7 that I -- that I -- yeah, I don't  
8 have an opinion on that. That  
9 wasn't something I was asked to --  
10 to form an opinion on.

11 Q. Do you -- do you have any  
12 explanation for why Ju would cite  
13 Kamal if it didn't have any  
14 applicability to sequencing by  
15 synthesis?

16 MR. SCHWARTZ: Objection,  
17 asked and answered.

18 Q. Anything whatsoever?

19 A. I don't -- I don't have an  
20 opinion on that.

21 Q. If you look at the '985  
22 patent and, specifically, column 3.

23 A. Column 3?

24 Q. Yeah. Do you see at lines  
25 25 through 30 it says, "It has been

1 STEVEN MENCHEN, Ph.D.

2 reported that

3 3'-O-methyl-deoxynucleotides are  
4 good substrates for several  
5 polymerases."

6 Do you see that sentence?

7 A. I see that sentence.

8 Q. And then the next sentence  
9 says -- refers to the allyl and  
10 says, "It was also shown to be  
11 incorporated by Ventr(exo-) DNA  
12 polymerase in the growing strand of  
13 DNA," and then it cites to Metzker.

14 Do you see that?

15 A. I see that.

16 Q. There Ju is citing Metzker  
17 approvingly, correct?

18 A. Provingly?

19 Q. Approvingly, yes.

20 A. When you look at Metzker  
21 it's -- it's not efficiently  
22 incorporated.

23 Q. I'm not asking you to look  
24 at Metzker. I'm asking you in terms  
25 of what's in column 3 at line 28

1 STEVEN MENCHEN, Ph.D.

2 through 30 of the '985 patent. At  
3 that location Ju is citing Metzker  
4 approvingly, correct?

5 MR. SCHWARTZ: Objection,  
6 form.

7 A. I can't say that it was  
8 approvingly. Those are just the  
9 words that he wrote.

10 Q. Do you see where he says  
11 "are good substrates"?

12 A. I see that.

13 Q. And then do you see -- and  
14 then it says, "Allyl was also shown  
15 to be incorporated," and you are  
16 saying that you can't tell whether  
17 that's approving or not?

18 A. I would say he's approving  
19 the 3'-O-methoxy.

20 Q. Okay. So with respect to  
21 the Axelrod you are agreeing that  
22 Axelrod is being approvingly by Ju  
23 of at line 28 of column 3 of the  
24 '985 patent?

25 A. Line 28. Ju says that they

1 STEVEN MENCHEN, Ph.D.

2 are good substrates and he cites  
3 Axelrod.

4 Q. He's citing Axelrod  
5 approvingly there, will you agree  
6 with that?

7 A. I -- I can't say if it's  
8 approvingly. I can read the words  
9 it says. That they are good  
10 substrates for several polymerases.

11 Q. Well, let's get beneath  
12 that a little bit. When you say you  
13 can't say that that's approvingly,  
14 is there a reason, is it because you  
15 weren't asked to form an opinion on  
16 it, is it because you don't know  
17 whether it's approval or not?

18 A. These are Ju's words. I  
19 can't say exactly what that means,  
20 if it's approvingly. I can say that  
21 it has been reported that  
22 3'-O-methoxy-deoxynucleotides are  
23 good substrates for several  
24 polymerases.

25 Q. I can read the words. Your



1 STEVEN MENCHEN, Ph.D.

2 job as an expert, as I think I  
3 understand things, I don't think I'm  
4 going out on a limb here, is to  
5 analyze and characterize and form  
6 opinions based on disclosures,  
7 right, that's what you've been  
8 doing?

9 A. That's what I have been  
10 doing, yeah.

11 Q. Okay. And I'm asking you  
12 to do that here and say whether  
13 that's an approving cite to Axelrod  
14 or not when he refers to it as a  
15 good substrate?

16 A. He says it's a good  
17 substrate.

18 Q. Right. Do you understand  
19 that's an approving citation or are  
20 you refusing to say that?

21 A. I don't really know what  
22 approving means. I don't understand  
23 the context of that word within this  
24 patent.

25 Q. So you can't answer my

STEVEN MENCHEN, Ph.D.

question as to whether Axelrod is being cited approvingly in column 3 of the Ju patent because you don't understand what approvingly means; is that correct?

A. I don't know what it means within the context of this patent.

Q. Do you deny that Ju is citing Metzker approvingly for the idea that allyl group could be incorporated in a growing strand of DNA using a polymerase?

A. The words that he uses to describe the 3'-allyl are different than the words that he uses to describe the 3'-methoxy.

Q. Do you deny that Ju cites Metzker approvingly in column 3 of the '985 patent?

A. I don't have an opinion on the use of that word.

Q. You are familiar with -- you understand that in Metzker's 1994 paper he performed a screen for

1 STEVEN MENCHEN, Ph.D.

2 different enzymes relative to  
3 different protecting groups?

4 A. That's correct.

5 Q. And you understand those  
6 types of screenings with polymerases  
7 that's routine. That was routine in  
8 the field in the mid-1990s?

9 A. I don't know that that was  
10 routine.

11 Q. Do you have an opinion one  
12 way or the other on that?

13 A. On whether they were  
14 routine, those screenings.

15 Q. To screen different  
16 polymerases, modify polymerases and  
17 to do that relative to different  
18 capping groups, do you have an  
19 opinion one way or the other as to  
20 whether that was routine in the  
21 mid-1990s?

22 A. Yeah. I -- I don't -- I  
23 don't know if that was routine.

24 Q. You don't know one way or  
25 the other?

1 STEVEN MENCHEN, Ph.D.

2 A. So this is with respect to  
3 SBS?

4 Q. No. Just generally.

5 MR. SCHWARTZ: Objection,  
6 form.

7 A. So you are talking about --  
8 yeah, give me an example of an  
9 application that you are talking  
10 about.

11 Q. Let me start again. The  
12 idea of screening protecting groups  
13 relative to a series of different  
14 enzymes in the mid-1990s that kind  
15 of screening technique was routine;  
16 is that correct?

17 MR. SCHWARTZ: Objection,  
18 form.

19 A. So you are talking about  
20 protecting groups?

21 Q. Yes. Let's talk about  
22 protecting groups?

23 A. Of polymerases?

24 Q. Right.

25 A. And the only one I know

1 STEVEN MENCHEN, Ph.D.

2 about is Metzker.

3 Q. Right. Do you know whether  
4 that technique was routine or not in  
5 the mid-1990s? Do you have an  
6 opinion one way or the other?

7 A. I don't know if that was  
8 routine.

9 Q. And do you know what the  
10 state of the art was in terms of  
11 modifying polymerases in the  
12 mid-1990s?

13 Let me ask the question again.  
14 Based on your experience in the  
15 field do you know what the state of  
16 the art was in terms of modifying  
17 enzymes in the 1990s, is that  
18 something that you know about?

19 A. That's not something that I  
20 could form an opinion on what the  
21 state of the art was.

22 Q. Why is that something that  
23 you don't know?

24 A. It's not something that I  
25 ever worked with myself.

1 STEVEN MENCHEN, Ph.D.

2 MR. REINES: All right. Why  
3 don't we take a break.

4 THE VIDEOGRAPHER: We are  
5 going off the record at 10:06 a.m.  
6 This ends media 1, Volume 2.

7 (Whereupon, there is a recess  
8 in the proceedings.)

9 THE VIDEOGRAPHER: We are back  
10 on the record. The time on the  
11 video monitor is 10:29 a.m. This  
12 is the start of media two, Volume  
13 2.

14 Q. I'd like to show you  
15 Dr. Ju's paper from 2005 marked  
16 Exhibit 1093.

17 (Exhibit 1093, Dr. Ju's paper  
18 from 2005, marked for  
19 identification, as of this date.)

20 Earlier you testified that  
21 there was a paper from Dr. Ju in  
22 the 2005-2006 time period that  
23 proved that allyl groups could be  
24 used as capping groups in his  
25 invention.

1 STEVEN MENCHEN, Ph.D.

2 Do you recall that testimony?

3 A. Yes, I do.

4 Q. Is this one of the papers  
5 that proves that to you?

6 A. Could I look through it?

7 Q. Please do. Read whatever  
8 you need to read in order to answer  
9 most accurately.

10 A. So, yes, this is one of  
11 papers that he used to demonstrate  
12 it.

13 Q. If you turn to the results  
14 and discussion section which is on  
15 page 5934, please.

16 A. Yeah, I'm there.

17 Q. And do you see it refers  
18 to, under Results and Discussion,  
19 "We have shown that an allyl moiety  
20 can be successfully used as a  
21 blocking group for the 3'-OH of a  
22 photocleavable fluorescent  
23 nucleotide analog in SBS"?

24 Do you see that?

25 A. I'm actually not. This --

1 STEVEN MENCHEN, Ph.D.

2 Q. 5934 under Results and  
3 Discussion?

4 A. Yeah, which paragraph?

5 Q. The first sentence  
6 immediately under the --

7 A. Oh, can be successfully  
8 used.

9 Okay. Yeah, I have read that,  
10 that sentence.

11 Q. The beginning of the next  
12 paragraph states, "Conventional  
13 methods for cleavage of the allyl  
14 group combine a transition  
15 metal-catalyzed isomerization of the  
16 double bond to the enol ether and  
17 subsequent hydrolysis of the latter  
18 to produce the corresponding  
19 alcohol."

20 Do you see that?

21 A. I see that.

22 Q. And do you understand that  
23 the cleaving of the allyl group in  
24 SBS is based on conventional methods  
25 in Dr. Ju's works?



1 STEVEN MENCHEN, Ph.D.

2 A. That -- that doesn't say --  
3 yeah, this doesn't say that.

4 Q. Okay. But do you  
5 understand that?

6 A. No, I don't understand  
7 that.

8 Q. Do you know what  
9 conventional methods he's referring  
10 to there?

11 A. I would have to look at 26  
12 and 27.

13 Q. Okay. Do you see where he  
14 says, "For application in SBS it is  
15 important to ensure that the  
16 complete chemical cleavage of the  
17 3'-allyl group can be rapidly and  
18 specifically carried out while  
19 leaving the DNA intact."

20 A. I see that.

21 Q. And then it says, "TPPTS  
22 has been widely used"?

23 A. I see that.

24 Q. Do you know what TPPTS is?

25 A. It's a sulfonated form of a

1 STEVEN MENCHEN, Ph.D.

2 triphenyl phosphene ligand.

3 Q. Were you aware of this  
4 before you were involved in this  
5 project?

6 A. No, I wasn't.

7 Q. Do you know when the  
8 conventional methods for cleaving  
9 allyl groups described in the Ju's  
10 2005 patent, do you know when --  
11 when they were first established?

12 A. Could you repeat that?

13 Q. Yes. The conventional  
14 methods for cleavage of an allyl  
15 group described in Ju's 2005  
16 article, do you know when they were  
17 first established in the field?

18 A. Of SBS?

19 Q. No.

20 A. You are talking outside of  
21 SBS?

22 Q. Yes.

23 A. No, I don't. I would have  
24 to look at that.

25 Q. That's something you know

1 STEVEN MENCHEN, Ph.D.

2 based on your expertise?

3 A. When they were established?

4 Q. Yeah.

5 A. No, I don't.

6 Q. Is the cleaving of capping  
7 groups, is that something that  
8 you -- an area that you worked in?

9 MR. SCHWARTZ: Objection,  
10 form.

11 A. I have done capping groups  
12 on what? On anything?

13 Q. In the context of DNA.

14 A. What?

15 Q. In the context of DNA.

16 A. In the context of SBS?

17 Q. No.

18 A. Yes, I have for DNA  
19 synthesis.

20 Q. And what was the -- when  
21 you -- so just to be clear, you  
22 worked in the area of cleavage of  
23 capping groups for DNA synthesis; is  
24 that correct?

25 MR. SCHWARTZ: Objection,

1 STEVEN MENCHEN, Ph.D.

2 form.

3 Q. You personally.

4 A. Yeah. I have worked in  
5 that area off and on.

6 Q. All right.

7 A. Early in my career.

8 Q. Did that involve  
9 phosphoramidite chemistry?

10 A. That's right.

11 Q. And were you using wet or  
12 dry?

13 A. For -- for cleaving the  
14 group?

15 Q. Yeah.

16 A. That depended, wet or dry,  
17 depending on what you were cleaving.

18 Q. Did you use -- have you  
19 used anything other than  
20 phosphoramidite chemistry for  
21 cleaving in the context of any of  
22 your work?

23 A. Cleaving DNA?

24 Q. Yes.

25 A. I don't remember.

1 STEVEN MENCHEN, Ph.D.

2 Q. Did you ever -- did you  
3 ever work with any of the cleaving  
4 chemistries related to this -- these  
5 proceedings?

6 A. No.

7 Q. Is that an area of  
8 chemistry where you would say you  
9 are an expert, cleaving  
10 technologies?

11 A. It's an area of chemistry  
12 where I could read -- read the  
13 articles, the literature and  
14 understand the literature.

15 Q. Okay. But that's not my  
16 question. My question is do you  
17 hold yourself out as an expert in  
18 cleaving technologies in the context  
19 of DNA?

20 MR. SCHWARTZ: Objection,  
21 form.

22 A. Yeah, I mean how do you  
23 define an expert?

24 Q. Just in terms of how you  
25 described yourself to the board in

1 STEVEN MENCHEN, Ph.D.

2 this matter.

3 MR. SCHWARTZ: Same objection.

4 A. I can become an expert by  
5 reading the -- the articles. I  
6 haven't published anything in the  
7 area.

8 Q. It's an area of technology  
9 that you followed over the course of  
10 your career, cleaving technologies  
11 in the course of DNA?

12 A. I have followed it.

13 Q. Okay. Based on the fact  
14 that you've been following the  
15 literature in the area of cleaving  
16 technologies for DNA, can you  
17 describe what the state of the art  
18 was in the 1990s?

19 A. Could you repeat that?

20 Q. Based on the fact that you  
21 state you've been following the  
22 literature in the area of cleaving  
23 technologies for DNA, can you  
24 describe what the state of the art  
25 was in the 1990s?

1 STEVEN MENCHEN, Ph.D.

2 MR. SCHWARTZ: Objection,  
3 form.

4 A. I can't -- I can't describe  
5 it because it would have to be  
6 something that I would have to go  
7 back and -- and review.

8 Q. Have you ever reviewed it?

9 A. I have studied it back in  
10 the 1990s.

11 Q. Okay. Since then is that  
12 something that you've thought about?

13 A. Probably.

14 Q. Okay. And based on the  
15 fact that this is an issue -- an  
16 area that you've thought about and  
17 followed, can you describe anything  
18 about a state of the art for  
19 cleaving technologies in the context  
20 of DNA in the 1990s?

21 A. I can't describe it at this  
22 deposition.

23 Q. Okay.

24 A. Not without going back and  
25 reviewing. Not without going back

1 STEVEN MENCHEN, Ph.D.

2 and reviewing what I might have  
3 read.

4 Q. With respect to this TPPTS  
5 cleaving technologies, is that  
6 something -- I think you said that's  
7 not something you've heard of before  
8 this matter; is that correct?

9 A. I didn't know about this  
10 reagent.

11 Q. Okay. If you turn to the  
12 notes, end notes, for the Ju  
13 article. Do you have that?

14 A. End notes.

15 MR. SCHWARTZ: What page are  
16 you -- when you say end notes,  
17 what --

18 Q. The end notes are at 5937.

19 MR. SCHWARTZ: You mean the  
20 references?

21 MR. REINES: Yeah. And notes  
22 references.

23 MR. SCHWARTZ: Okay.

24 A. 5937?

25 Q. Yeah.



1 STEVEN MENCHEN, Ph.D.

2 A. Okay.

3 Q. All right. And do you see  
4 the citation to 30, which is the  
5 Genet reference?

6 A. I see that.

7 Q. And let me show you this.  
8 It's marked as Exhibit 1094.

9 (Exhibit 1094, Genet reference  
10 from 1994, marked for  
11 identification, as of this date.)

12 Q. And by the way, when you  
13 read the Ju reference, did you look  
14 at citations that he used so that  
15 you could understand his article  
16 better?

17 A. I looked at some of the --  
18 some of the citations.

19 Q. Okay. And let me show you  
20 the Genet reference from 1994.

21 MR. SCHWARTZ: I'm sorry, what  
22 exhibit number is this?

23 MR. REINES: This is 1094.

24 Q. And this Genet reference  
25 from 1994, this is one of the

1 STEVEN MENCHEN, Ph.D.

2 references that you considered in  
3 this matter as part of your review  
4 of Ju's work; is that correct?

5 A. That's correct.

6 Q. And if you look at page  
7 499, do you see that Table 1? And  
8 do you understand this table?

9 A. I understand the table.

10 Q. All right. And will you  
11 agree that deprotecting ALLOC in  
12 aqueous solution as set forth here  
13 was known in the state of the --  
14 within the level of skill of the art  
15 in the mid-1990s? It's a very  
16 specific question.

17 A. ALLOC is not an allyl  
18 ether.

19 Q. But my question is do you  
20 see at the top it says,  
21 "Deprotective method of Alloc in  
22 aqueous media." Do you see that at  
23 the top?

24 A. Yeah, I see that.

25 Q. My question is just is this

1 STEVEN MENCHEN, Ph.D.

2 method described on page 499, this  
3 was within the level of ordinary  
4 skill in the art in the mid-1990s  
5 for deprotection; is that correct?

6 A. I would say so.

7 Q. Does the Ju patent  
8 disclose -- do you have any  
9 explanation for why Ju cites the  
10 Genet reference and other references  
11 to describe deprotection in his  
12 articles but that they're not -- it  
13 doesn't do so in the patent?

14 MR. SCHWARTZ: Objection,  
15 form. Objection as to scope.

16 A. The article was submitted  
17 in 2005. Other than that, I don't  
18 have any other opinion.

19 Q. Turning to the '985 patent  
20 itself.

21 A. '985?

22 Q. '985, yeah. Which is  
23 Exhibit 1075. What is the -- what  
24 is the linker that's described by  
25 Ju? What's the teaching of the

1 STEVEN MENCHEN, Ph.D.

2 linker?

3 A. Objection, scope.

4 MR. SCHWARTZ: Objection,  
5 scope.

6 A. I wasn't asked to evaluate  
7 the -- the linker part of the  
8 patent.

9 Q. Do you know whether Dower  
10 contains more or less about  
11 cleavable linkers than the Ju  
12 reference?

13 MR. SCHWARTZ: Objection,  
14 scope. Objection, form.

15 Q. Do you know whether Dower  
16 discloses more about linkers than  
17 the Ju reference -- than the Ju  
18 patent, excuse me. Let me start  
19 again. Do you know whether Dower  
20 discloses more about cleavable  
21 linkers than the Ju patent, or is  
22 that something you never considered?

23 MR. SCHWARTZ: Objection,  
24 form. Objection, scope.

25 A. I haven't considered that.

1 STEVEN MENCHEN, Ph.D.

2 Q. What would a person of  
3 ordinary skill in the art in the  
4 2000 time period know about  
5 cleavable linkers in the context of  
6 DNA?

7 MR. SCHWARTZ: Objection,  
8 scope.

9 A. Cleavable linkers with  
10 regard to what?

11 Q. DNA.

12 A. Yeah, I -- I don't know  
13 what they would have known. I can't  
14 answer that question.

15 Q. In Ju's 2005 article he  
16 describes actual experiments; is  
17 that correct?

18 A. That's correct.

19 Q. Do you know whether Ju  
20 performed any experiments relating  
21 to sequencing by synthesis as  
22 described in the claims of the Ju  
23 patents before 2005?

24 MR. SCHWARTZ: Objection,  
25 scope.

1 STEVEN MENCHEN, Ph.D.

2 Q. Based on all the work that  
3 you've done in this case.

4 A. I don't know.

5 Q. I'd like to show you a  
6 grant proposal marked as  
7 Exhibit 2118. Is this grant  
8 proposal familiar to you?

9 A. No.

10 MR. SCHWARTZ: Objection,  
11 scope.

12 Q. You've never seen this  
13 before?

14 A. I don't remember seeing  
15 this document.

16 Q. Turn to page 8, at the very  
17 bottom. And do you see over here,  
18 you see Dr. Ju and Steve Quake under  
19 Dr. Romesberg's name?

20 A. I see that.

21 MR. SCHWARTZ: I'm going to  
22 just object generally to any line  
23 of questioning relating to this  
24 document to outside the scope.

25 Q. Did you know that

1 STEVEN MENCHEN, Ph.D.

2 Dr. Romesberg worked with Dr. Ju?

3 A. I learned that during  
4 Dr. Romesberg's deposition.

5 Q. Did you ever work with  
6 Dr. Ju?

7 A. No.

8 Q. If you turn to page 29 of  
9 the document.

10 A. I'm there.

11 Q. And it says specifically  
12 the Ju group has developed --

13 A. You are going to have to  
14 point me.

15 Q. Oh, sorry. At the very  
16 bottom in the left column. Fair  
17 enough.

18 MR. SCHWARTZ: Excuse me, did  
19 you say 29?

20 MR. REINES: At the bottom of  
21 the page there's two numbers.

22 MR. SCHWARTZ: Right. Two  
23 numbers on 24.

24 MR. REINES: Ah, no wonder.

25 Q. At the very bottom there is

1 STEVEN MENCHEN, Ph.D.

2 a numbering system.

3 A. There's two sets of numbers  
4 here.

5 Q. Yeah. Understood. The  
6 lower one.

7 MR. SCHWARTZ: The lower one?

8 Q. Yes. The lower one meaning  
9 the bottom of the page  
10 typographically.

11 A. So I'm on page 29.

12 Q. Okay, great.

13 A. You are going to have to  
14 tell me where you are.

15 Q. Yeah. It's on the bottom  
16 of the left column about six lines  
17 up. It says, "Specifically, the Ju  
18 group has developed allyl protecting  
19 groups that may be catalytically  
20 removed with the palladium."

21 Do you see that?

22 A. I see that.

23 Q. And if you turn to end note  
24 11 on page 42 you'll see the  
25 reference to the Ju article?



1 STEVEN MENCHEN, Ph.D.

2 A. Page 42. It's reference

3 11?

4 Q. Yep.

5 A. I see that.

6 Q. And so you understand that  
7 the reference made by Dr. Romesberg  
8 and Dr. Ju is to the allyl work from  
9 Dr. Ju that we referred to earlier?

10 A. Yes.

11 Q. And then Dr. Ju and  
12 Dr. Romesberg state, "However, like  
13 all 3' " --

14 A. You are back on page 29.

15 Q. Yeah, I'm back on page 29,  
16 left column, bottom of the page.

17 A. Okay.

18 Q. It says, "However, like all  
19 3'-O modified dNTPs examined as well  
20 as the nucleobase-modified dNTPs  
21 discussed above, these three  
22 protected dNTPs are very inefficient  
23 substrates for DNA polymerases."

24 Do you see that?

25 A. I see that.

1 STEVEN MENCHEN, Ph.D.

2 Q. And do you agree that allyl  
3 protecting groups are very  
4 inefficient, at least at the -- at  
5 the -- at the time of this grant  
6 application which is dated 2005?

7 MR. SCHWARTZ: Again,  
8 objection, scope.

9 A. So this is -- yeah, I mean  
10 this is after the time that I was  
11 put. So I was supposed to evaluate  
12 from before 2000. Not really -- I  
13 don't really have an opinion on this  
14 after 2000.

15 Q. In terms of -- are you  
16 aware that standards for the  
17 efficiency of DNA polymerases  
18 working with modified nucleotides  
19 changes over time with developments  
20 in technology?

21 MR. SCHWARTZ: Objection,  
22 scope. Objection to form.

23 A. Yeah, I'm not sure exactly  
24 what that -- what that means. Could  
25 you repeat that?

1 STEVEN MENCHEN, Ph.D.

2 Q. You don't -- is there  
3 something about that that you don't  
4 understand?

5 A. What do you mean by  
6 standard?

7 Q. Standards.

8 A. Standards.

9 Q. Like one -- like someone  
10 might call something an inefficient  
11 polymerase for incorporating an  
12 analog nucleotide at one point and  
13 then as technology moves on  
14 something that started out as being  
15 efficient moves to inefficient.

16 MR. SCHWARTZ: Objection,  
17 form. Objection, scope.

18 Q. Let me ask the question  
19 again.

20 A. Yeah.

21 Q. You are aware that  
22 standards for what's efficient  
23 incorporation of DNA analogs changes  
24 over time as technology improves?

25 MR. SCHWARTZ: Objection,

1 STEVEN MENCHEN, Ph.D.

2 scope. Objection, form.

3 A. Yeah, I -- I understand  
4 what you are asking. I can't think  
5 of a specific example of that  
6 happening.

7 Q. Okay. Let me see if what  
8 we just looked at is an example of  
9 that or not. You know that Dr. Ju  
10 considers allyl to be efficiently  
11 incorporated, correct?

12 A. In?

13 Q. In his 2005 article. In --  
14 apparently in his patents. Right?

15 A. In the two thousand --

16 Q. That much you know, right?

17 A. What?

18 Q. That much you know, right?

19 A. In the 2005 article, yeah,  
20 it looked like he solved the  
21 problem, yeah.

22 Q. And what was the problem?

23 A. The problem with Metzker,  
24 inefficient incorporation.

25 Q. Okay. But -- and what did

1 STEVEN MENCHEN, Ph.D.

2 he do in the 2005 work that you  
3 think solved the Metzker problem?

4 MR. SCHWARTZ: Objection,  
5 scope.

6 Q. What you are calling the  
7 Metzker problem anyway.

8 A. Could -- could I look at  
9 that article again?

10 Q. Yeah, please. It's  
11 Exhibit 1093. Take your time and  
12 read whatever you need to read.

13 A. Sure. So it looks like he  
14 used a different enzyme.

15 Q. And can you -- can you  
16 describe based on your work in this  
17 matter and your review of the Ju  
18 1995 paper what the key was to  
19 solving the Metzker prob- -- what  
20 you are calling the Metzker problem  
21 of inefficient incorporation?

22 MR. SCHWARTZ: Objection --

23 Q. Specifically.

24 MR. SCHWARTZ: Objection,  
25 scope.

1 STEVEN MENCHEN, Ph.D.

2 A. Yeah. I don't know that --  
3 that's what it looks like as I read  
4 it, but I don't know the total  
5 solution without reading the whole  
6 paper and going back and reading  
7 that.

8 Q. Yeah, but what -- you  
9 identified the -- the enzyme. Can  
10 you just point me to what you are  
11 referring to?

12 A. On page 5934, this 9°N  
13 polymerase wasn't part of the  
14 Metzker screen.

15 Q. Can you just read the  
16 sentence into the record so it's  
17 clear what you are saying is the --  
18 at least one key development by Ju  
19 in his 1995 work --

20 A. I'm not saying that it's  
21 one key development.

22 Q. What are you -- well, then  
23 let me --

24 A. I'm saying that this is  
25 different compared to Metzker.

1 STEVEN MENCHEN, Ph.D.

2 Q. Okay. Point out what you  
3 think -- let me start again.

4 You testified that there was  
5 development in the polymerase used  
6 by Ju in his 1995 work that helped  
7 overcome what you called the Metzker  
8 problem. Do you recall that  
9 generally?

10 A. I didn't say that. What I  
11 said was that there was a Metzker  
12 problem and when I read this paper I  
13 see that Ruperal, Ju is using 9°N  
14 polymerase. Metzker didn't use that  
15 in his screen. I don't know that  
16 that's his -- everything that  
17 happened to solve the problem. I'm  
18 just saying that that's what's  
19 different.

20 Q. That's -- that's part of  
21 what helped solve the problem, would  
22 you say that much?

23 A. I'm saying that that's  
24 different.

25 Q. And what's the significance

1 STEVEN MENCHEN, Ph.D.

2 of it being different to you?

3 A. Metzker never screened it.

4 Q. And why is that  
5 significant?

6 A. It's different.

7 Q. And where is -- if you can  
8 just read it because I'm not  
9 following where you are. You know  
10 how you kept asking me where I am  
11 if --

12 A. Oh, sure. Let me read the  
13 sentence. Also, I'm on the  
14 left-hand column. It says "primer  
15 extension." So I'm on page 5934.

16 Q. So let me pose the whole  
17 question because right now we don't  
18 have a really good question here.

19 You referred to the Metzker  
20 problem with incorporating  
21 terminators and you identified as  
22 different what Ju did in 2005, that  
23 he had a different polymerase. Is  
24 that fair?

25 A. It's a polymerase that



1 STEVEN MENCHEN, Ph.D.

2 wasn't examined by Metzker.

3 Q. Right. And which --  
4 where -- where is that now? Can you  
5 describe that?

6 A. It says primary -- you see  
7 the primer extension using the  
8 3'-O-allyl-dUTP. Do you see that?

9 Q. Oh, yeah, yeah. The -- in  
10 bold, yes.

11 A. Right. And then come down  
12 about seven lines it says,  
13 "Thermopol reaction buffer."

14 Q. Okay.

15 A. And 15 units of 9° North --  
16 9°N polymerase.

17 Q. Okay. Is the polymerase  
18 that Ju uses in 2005 with his allyl  
19 capping group, was that known in the  
20 art in the 1990s?

21 MR. SCHWARTZ: Objection,  
22 scope.

23 A. I don't know.

24 Q. Do you have any opinion on  
25 that one way or the other as to

1 STEVEN MENCHEN, Ph.D.

2 whether a person skilled in the art  
3 would know -- be aware of that  
4 within their level of skill in the  
5 art?

6 MR. SCHWARTZ: Same objection.

7 A. I don't have any opinion on  
8 that.

9 Q. Other than Ju's use of a  
10 different polymerase in his 2005  
11 work, is there anything else that  
12 you saw in Ju's 2005 work that  
13 you -- that you thought addressed  
14 what you call the Metzker problem?

15 MR. SCHWARTZ: Objection.

16 Asked and answered.

17 A. I can't -- yeah, I can't  
18 say for sure.

19 Q. What?

20 A. I can't say for sure.

21 Q. In Ju's 2005 paper he  
22 characterizes the allyl capping  
23 group as being efficiently  
24 incorporated into the DNA, correct?

25 A. Could you show me where it

1 STEVEN MENCHEN, Ph.D.

2 says that?

3 Q. I'm asking you.

4 A. I don't know that he makes  
5 that statement in here. I would  
6 have to find that.

7 Q. Do you consider the  
8 incorporation of the allyl capping  
9 group -- well, do you consider the  
10 incorporation of the terminators  
11 with the allyl capping group to be  
12 efficient as described in the Ju  
13 paper?

14 MR. SCHWARTZ: Objection --

15 Q. I know you read that paper  
16 in advance of the deposition.

17 MR. SCHWARTZ: Objection,  
18 form. Objection, scope.

19 A. I -- I can't really judge  
20 that.

21 Q. Why not?

22 A. Because I don't know  
23 exactly what the -- I would have to  
24 go back and reread this.

25 Q. Why is that?

1 STEVEN MENCHEN, Ph.D.

2 A. Because you are asking me  
3 about something that I hadn't really  
4 considered when I read this paper.

5 Q. Is the incorporation of cap  
6 terminators in the Ju patent, is  
7 that efficient?

8 MR. SCHWARTZ: Objection,  
9 scope. Objection, form.

10 A. I didn't read the Ju patent  
11 with looking into that. I was only  
12 looking at what he disclosed as  
13 prior art. That's all I did.

14 Q. Is there any cap terminator  
15 that you are aware of that's ever  
16 been efficiently incorporated into  
17 DNA?

18 A. That depends on what you  
19 mean by efficient.

20 Q. Are you sufficiently an  
21 expert in order to be able to assess  
22 whether or not incorporation of a  
23 modified termi- -- of a terminator  
24 is efficient or not in DNA?

25 MR. SCHWARTZ: Objection,

1 STEVEN MENCHEN, Ph.D.

2 form.

3 A. I would have to go back  
4 and -- and review that whole area to  
5 make that determination.

6 Q. That's not something that  
7 you did as part of your work in this  
8 case; is that correct?

9 A. Excuse me?

10 Q. That's not something you've  
11 done as part of your work in this  
12 case?

13 A. To review the whole area of  
14 cap terminators and efficiency?

15 Q. Well, that isn't my  
16 question. Let me -- let me ask it  
17 this way.

18 Can you identify any  
19 terminator with a capping group that  
20 you believe is efficiently  
21 incorporated into DNA in the history  
22 of science?

23 MR. SCHWARTZ: Objection to  
24 form.

25 A. I can't describe one right

1 STEVEN MENCHEN, Ph.D.

2 now.

3 Q. You can't identify even  
4 one?

5 A. That's not something --  
6 that wasn't something that I was  
7 asked to do for this deposition.

8 Q. Yeah, I'm not asking you  
9 whether you were asked to do it, I'm  
10 asking you whether you can identify  
11 even one based your expertise and  
12 your hundreds of hours of work on  
13 this matter?

14 A. No, I don't think I can  
15 identify one right now. I would  
16 have to go do a search.

17 Q. Do you agree with Ju and  
18 Romesberg, at least from the  
19 perspective of 2005, that three  
20 protected dNTPs are very inefficient  
21 substrates for DNA polymerases?

22 MR. SCHWARTZ: Objection,  
23 form. Objection, scope.

24 A. I'm not going to dispute  
25 that.

1 STEVEN MENCHEN, Ph.D.

2 Q. Are the standards of  
3 what -- of the efficiency of dNTPs  
4 with DNA polymerases something  
5 that's changed over time?

6 A. I don't know.

7 MR. REINES: Why don't we take  
8 another break.

9 MR. SCHWARTZ: Before we go  
10 off the record, I just want to say,  
11 you know, you are taking still a  
12 lot of breaks and they are long  
13 breaks. So again, please be  
14 considerate of the fact that we  
15 have a lot of stuff to get through  
16 today.

17 MR. REINES: Yes.

18 MR. SCHWARTZ: So maybe you  
19 can keep your breaks short because  
20 the last one was 25 minutes.

21 MR. REINES: I'm happy to do  
22 that. I'm also in the process of  
23 doing that being I think extra  
24 considerate by cutting down on the  
25 questioning where I'm able to do

1 STEVEN MENCHEN, Ph.D.

2 things so I'm hopeful that I won't  
3 need to use all my time.

4 MR. SCHWARTZ: Okay. So thank  
5 you.

6 MR. REINES: So further  
7 consideration.

8 MR. SCHWARTZ: Thank you.

9 THE VIDEOGRAPHER: The time on  
10 the video monitor is 11:14 a.m. We  
11 off the record.

12 (Whereupon, there is a recess  
13 in the proceedings.)

14 THE VIDEOGRAPHER: We are back  
15 on the record. The time on the  
16 video monitor is 11:28 a.m.

17 Q. I just want to return to  
18 the subject of the standards for  
19 what is efficient and what is not  
20 efficient incorporation.

21 Do you agree that those  
22 standards change over time with the  
23 development of technology or not?

24 A. I mean if it's a  
25 standard -- yeah, I really can't



1 STEVEN MENCHEN, Ph.D.

2 picture that. If it's a standard,  
3 it should be the same. But I just  
4 don't know. Not on those terms.

5 Q. When you say you just don't  
6 know, what do you mean you just  
7 don't know?

8 A. Yeah, I can't tell you that  
9 they do change or they don't change.

10 Q. Would a person of ordinary  
11 skill in the art reading the Ju '985  
12 patent know to use the polymerase  
13 that's described in Ju's 2005  
14 article for incorporation of the  
15 allyl group?

16 MR. SCHWARTZ: Objection,  
17 scope.

18 A. So I didn't study the  
19 available polymerases then. So I  
20 can't say.

21 MR. REINES: All right. I  
22 think that is what I have for our  
23 examination.

24 MR. SCHWARTZ: You are  
25 finished with your examination?

1 STEVEN MENCHEN, Ph.D.

2 MR. REINES: Well, subject to  
3 redirect.

4 MR. SCHWARTZ: Okay. Shall we  
5 take an early lunch now then? This  
6 would be a good time for our lunch  
7 break.

8 Okay. Give us an opportunity  
9 to look at the transcript. Okay.

10 MR. REINES: Thank you.

11 THE VIDEOGRAPHER: The time on  
12 the video monitor is 11:32 a.m. We  
13 off the record.

14 (Luncheon recess taken at  
15 11:32 a.m.)  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

1 STEVEN MENCHEN, Ph.D.

2 A F T E R N O O N S E S S I O N

3 (Time noted: 1:08 p.m.)

4 S T E V E N M. M E N C H E N,  
5 resumed and testified as follows:

6 THE VIDEOGRAPHER: We are back  
7 on the record. The time on the  
8 video monitor is 1:08 p.m. This is  
9 media three, Volume 2.

10 EXAMINATION BY

11 MR. SCHWARTZ:

12 Q. Dr. Menchen, I -- I have a  
13 couple of questions for you on  
14 redirect.

15 A. Okay.

16 Q. I'm handing you  
17 Exhibit 2052. Is this a declaration  
18 that you submitted in these  
19 proceedings in July of 2018?

20 A. Yes.

21 Q. And please turn to  
22 paragraph 16.

23 A. I'm there.

24 Q. And paragraph 16, let me  
25 get there, you say, "I have reviewed

1 STEVEN MENCHEN, Ph.D.

2 Illumina's petition and  
3 Dr. Romesberg's declaration."

4 Do you see that?

5 A. I see that.

6 Q. Does this refresh your  
7 recollection as to whether you  
8 reviewed Dr. Romesberg's declaration  
9 prior to forming your opinions in  
10 this case?

11 A. I guess I did, yeah.

12 Q. Please turn to paragraph 6.  
13 And it states in paragraph 6, "In  
14 connection with the preparation of  
15 this declaration I have read the  
16 following documents."

17 Do you see that?

18 A. I see that.

19 Q. And then number C -- I'm  
20 sorry, letter C lists  
21 Dr. Romesberg's declaration. Do you  
22 see that?

23 A. I see that.

24 Q. Is this consistent with the  
25 testimony that you just gave that

1 STEVEN MENCHEN, Ph.D.

2 you reviewed Dr. Romesberg's  
3 declaration prior to submitting your  
4 opinions in this case?

5 MR. REINES: Objection,  
6 leading.

7 A. You are talking about the  
8 last question?

9 Q. Yeah.

10 A. Yeah. Yeah, that's  
11 consistent.

12 Q. And please turn back to  
13 your declaration in the method case,  
14 Exhibit 2114.

15 A. Do you have a copy of that  
16 declaration?

17 Q. Well, you should have one.

18 A. I don't -- I just don't --  
19 I don't see it.

20 Q. Do you have it? I think  
21 that's it. You have it?

22 A. I have it.

23 Q. And this is the declaration  
24 you submitted on October 25th, 2018;  
25 is that right?

1 STEVEN MENCHEN, Ph.D.

2 A. That's correct.

3 Q. And please turn to  
4 paragraph 83.

5 MR. REINES: I'm sorry, 83?

6 MR. SCHWARTZ: 83.

7 MR. REINES: Thank you.

8 Q. Take a moment to review  
9 that. And perhaps I can help you by  
10 directing you to the bottom. Do you  
11 see at the bottom of paragraph 83  
12 there's a citation to  
13 Dr. Romesberg's declaration?

14 A. I see that.

15 Q. Does this confirm --  
16 conform with your testimony you just  
17 gave a moment ago that you reviewed  
18 Dr. Romesberg's declaration prior to  
19 forming your opinions in this case?

20 A. That's correct.

21 Q. And your declaration,  
22 Exhibit 2114, was submitted on  
23 October 25th, 2018; is that correct?  
24 Look at the signature page.

25 A. Yes. That's correct.

1 STEVEN MENCHEN, Ph.D.

2 Q. And do you understand that  
3 Dr. Romesberg was deposed in these  
4 proceedings on three separate days  
5 between September and October 9th of  
6 2018? Do you remember that?

7 A. I do remember that.

8 Q. And were you present when  
9 Dr. Romesberg was deposed on each of  
10 those days?

11 A. I was present on each day.

12 Q. And as we have just  
13 established you also read  
14 Dr. Romesberg's declaration prior to  
15 submitting your opinions in this  
16 case; is that correct? That was  
17 your testimony?

18 A. That's my testimony.

19 Q. So does this refresh your  
20 recollection that you were aware of  
21 Dr. Romesberg's opinions in this  
22 case prior to submitting your own  
23 opinions?

24 A. That's correct.

25 Q. Okay. You can put that

1 STEVEN MENCHEN, Ph.D.

2 away.

3 In many of your answers  
4 yesterday and today you referred to  
5 a person of ordinary skill in the  
6 art also called a POSA. In those  
7 answers were you referring to a POSA  
8 prior to 2000?

9 A. Yes.

10 Q. And when you referred to a  
11 POSA in your answers, you weren't  
12 referring to a POSA at any time  
13 other than prior to October 2000, is  
14 that accurate?

15 MR. REINES: Objection,  
16 leading.

17 A. That is correct.

18 Q. And when Mr. Reines was  
19 asking you questions and he used the  
20 term "POSA," was it your  
21 understanding that he was referring  
22 to a POSA prior to October 2000?

23 A. That's correct.

24 Q. And when Mr. Reines was  
25 asking you questions, you didn't



1 STEVEN MENCHEN, Ph.D.

2 understand him to be referring to a  
3 POSA at any time other than prior to  
4 October 2000; is that correct?

5 MR. REINES: Objection,  
6 leading.

7 A. That's correct.

8 Q. Yesterday you were asked  
9 the following question, "Would a  
10 POSA reading the paragraphs at lines  
11 12 through 29 of the Ju patent  
12 understand that Ju is saying that  
13 MOM and allyl could be used for his  
14 invention."

15 And you gave the following  
16 answer. "A person skilled in the  
17 art would not see that you can  
18 cleave the allyl under SBS  
19 conditions. He" really -- "He  
20 doesn't really show that in this  
21 paragraph."

22 That was your answer. And  
23 when you referred to a POSA in your  
24 answer, were you referring to a POSA  
25 prior to October 2000?

1 STEVEN MENCHEN, Ph.D.

2 A. That's correct.

3 MR. REINES: Objection to  
4 form. Leading.

5 Q. And that means prior to  
6 Dr. Ju's invention; is that correct?

7 MR. REINES: Objection,  
8 leading.

9 A. That's correct.

10 MR. REINES: And to form.

11 Q. In your declaration were  
12 you responding to Dr. Romesberg's  
13 positions on certain issues?

14 A. Yes, I was.

15 Q. Please turn -- please turn  
16 to the '985 patent, that's the  
17 Exhibit 1075.

18 A. I have it.

19 Q. And please turn to column  
20 1. It's after all the figures. And  
21 I want you to draw your attention to  
22 where it says Background of the  
23 Invention. And then the first  
24 paragraph there says, "Throughout  
25 this application various

1 STEVEN MENCHEN, Ph.D.

2 publications are referenced in  
3 parenthesis by author and year.  
4 Full citations for these references  
5 may be found at the end of the  
6 specification immediately preceding  
7 the claims. The disclosure of  
8 these -- "The disclosures of these  
9 publications in their entireties are  
10 hereby incorporated by reference  
11 into this application to be more  
12 fully -- to more fully describe the  
13 state of the art to which this  
14 invention pertains."

15 Did you review all of the  
16 publications incorporated into the  
17 patents?

18 A. Not all of the  
19 publications.

20 Q. Please turn to your  
21 materials considered list, which is  
22 Exhibit 2108. It's a small  
23 document.

24 A. Okay.

25 Q. And please turn to page 2.

1 STEVEN MENCHEN, Ph.D.

2 And do you see where there's a  
3 listing for Exhibit 1076. It says,  
4 "Excerpts from prosecution history  
5 of U.S. Patent No. 9,868,985."

6 Do you see that?

7 A. I see that.

8 Q. Were you asked to read the  
9 entirety of the prosecution history  
10 for the patents at issue?

11 A. No.

12 Q. For this case, were you  
13 asked to assess whether Dr. Ju's  
14 patent teaches which capping groups  
15 are small?

16 A. No.

17 Q. Would you feel comfortable  
18 offering an opinion on whether  
19 Dr. Ju's patent teaches which  
20 capping groups are small without  
21 reviewing all of the cited  
22 references therein?

23 A. No.

24 Q. And would you feel  
25 comfortable offering an opinion on

1 STEVEN MENCHEN, Ph.D.

2 whether Dr. Ju's patents teaches  
3 which capping groups are small  
4 without having reviewed the entire  
5 file wrapper?

6 A. Could you repeat that  
7 question?

8 Q. And would you feel  
9 comfortable offering an opinion on  
10 whether Dr. Ju's patent teaches  
11 which capping groups are small  
12 without having reviewed the entire  
13 file wrapper, the entire prosecution  
14 history, would you feel comfortable?

15 A. No.

16 Q. For this case, were you  
17 asked to assess whether Dr. Ju's  
18 patent teaches which capping groups  
19 meet the limitations of the claims?

20 A. I was not.

21 Q. And would you feel  
22 comfortable offering an opinion on  
23 whether Dr. Ju's patents teaches  
24 which capping groups meet the  
25 limitations of the claims without

1 STEVEN MENCHEN, Ph.D.

2 having reviewed all of the  
3 references cited in this patent?

4 A. No.

5 Q. And would you feel  
6 comfortable offering an opinion on  
7 whether Dr. Ju's patent teaches  
8 which capping groups meet the  
9 limitations of the claims without  
10 having reviewed the entire  
11 prosecution history of the patent?

12 A. No.

13 Q. For this case, were you  
14 asked to assess whether Dr. Ju's  
15 patent teaches how to use the allyl  
16 or MOM capping group?

17 A. No.

18 Q. And would you feel  
19 comfortable offering an opinion on  
20 whether Dr. Ju's patent teaches how  
21 to use the allyl or MOM capping  
22 group without having reviewed all of  
23 the references in the patent?

24 A. No.

25 Q. And would you feel

1 STEVEN MENCHEN, Ph.D.

2 comfortable offering an opinion on  
3 whether Dr. Ju's patent teaches how  
4 to use the allyl or MOM capping  
5 group without having reviewed the  
6 entire prosecution history of the  
7 patent?

8 A. No.

9 Q. Yesterday you were asked  
10 whether a POSA reading all of the  
11 relevant patent documents would  
12 understand what the term "small"  
13 meant and you answered you did not  
14 know.

15 Were you asked to review the  
16 patents and prosecution history to  
17 determine what someone reading all  
18 of the patent documents would  
19 understand the term "small" to mean?

20 A. No.

21 Q. And because you didn't do  
22 that, did that affect whether or not  
23 you had an opinion on what the term  
24 "small" means?

25 A. Yes.

1 STEVEN MENCHEN, Ph.D.

2 Q. Yesterday Mr. Reines made a  
3 statement along the lines of saying  
4 that since you cited the file  
5 history in your declaration he  
6 should be able to ask you questions  
7 about anything in all of that file  
8 history. Do you remember that?

9 MR. REINES: Objection,  
10 misstates the transcript.

11 A. Yes, I do.

12 Q. Let's go to your  
13 declaration, Exhibit 2114, and  
14 that's the method declaration. You  
15 just had it.

16 A. Yeah, I have it.

17 Q. And turn to paragraph 20.  
18 Got it?

19 A. Yeah, I have it.

20 Q. About halfway down you cite  
21 to Exhibit 1076 at page 32. Do you  
22 see that, about halfway down?

23 A. Yeah, I see that.

24 Q. And please look at your  
25 exhibit list. You just had that, it



1 STEVEN MENCHEN, Ph.D.

2 was Exhibit 2108. It's short. Is  
3 it your understanding that  
4 Exhibit 1076 contains excerpts of  
5 the prosecution history of the  
6 patent in this proceeding?

7 A. Yes.

8 Q. Going back to your  
9 declaration, did you cite page 32 of  
10 Exhibit 1076 to support your  
11 construction of chemical linker?

12 A. Yes.

13 Q. And turn to paragraph 21 of  
14 your declaration, please. And take  
15 a moment to review it.

16 A. Okay.

17 Q. In the first sentence you  
18 cite Exhibit 1076 at pages 20 to 21.  
19 Did you cite those pages to support  
20 your construction of chemical  
21 linker?

22 A. Yes.

23 Q. At the end of paragraph 21  
24 you cite Exhibit 1076 at pages 96,  
25 11 and 15. Do you see that?

1 STEVEN MENCHEN, Ph.D.

2 A. I see that.

3 Q. Did you cite those pages to  
4 support your construction of  
5 chemical linker?

6 A. Yes.

7 Q. Is it your understanding  
8 that these are the only places that  
9 you refer to for Exhibit 1076?

10 A. It's my understanding.

11 Q. At your deposition  
12 yesterday you were asked the  
13 following question, "Can you  
14 identify any technological reason  
15 why allyl wouldn't meet the  
16 requirements of claim 1 of the '985  
17 patent."

18 And as part of your answer you  
19 said, "There's no method for  
20 cleaving it. Nothing in the prior  
21 art that would satisfy SBS."

22 In your answer when you were  
23 referring to the prior art, were you  
24 referring to the prior art that was  
25 cited by Illumina?

1 STEVEN MENCHEN, Ph.D.

2 A. I was referring to the  
3 prior art cited by Illumina.

4 Q. Were you referring to prior  
5 art other than that cited by  
6 Illumina?

7 A. No.

8 Q. And regarding cleavage  
9 conditions, Illumina cited Kamal,  
10 Boss, Quian and Tsien. Is that  
11 accurate?

12 A. That's accurate.

13 Q. And were those the prior  
14 art references you were referring to  
15 in your testimony yesterday?

16 A. That's correct.

17 Q. Please look at your  
18 declaration at page 29. Remember  
19 yesterday Mr. Reines took you to  
20 this paragraph and asked you some  
21 questions?

22 A. That's the full paragraph.  
23 Starts -- it's paragraph 51.

24 Q. Right.

25 A. Okay.

1 STEVEN MENCHEN, Ph.D.

2 Q. Remember that?

3 A. Yes.

4 Q. I'm marking a new exhibit,  
5 Exhibit 2130. Can you hand that to  
6 the court reporter, please?

7 (Exhibit 2130, The NEB  
8 Transcript, incomplete, marked for  
9 identification, as of this date.)

10 MR. REINES: Can I have a  
11 copy?

12 MR. SCHWARTZ: We are just  
13 checking to make sure our copy  
14 machine didn't leave pages out.  
15 All right. I'm going to move to  
16 another question while we confirm.  
17 So I strike that.

18 I strike that question until  
19 we confirm we have all the pages.  
20 I just want to make sure that we  
21 have a clean record.

22 Q. Yesterday, Dr. Menchen --  
23 you can put no aside for now. I  
24 just have to make sure that my  
25 exhibit has been copied correctly.

1 STEVEN MENCHEN, Ph.D.

2 Yesterday when asked if you  
3 were aware of any examples where a  
4 read through band and an efficiency  
5 test band co-exist you cited Metzker  
6 1998. Do you remember that?

7 A. I remember that.

8 Q. I'm now going to hand you  
9 what's been -- what is going to be  
10 marked as Exhibit 2131.

11 (Exhibit 2131, Short technical  
12 Reports, marked for identification,  
13 as of this date.)

14 MR. REINES: Was this cited  
15 with your submission report?

16 MR. SCHWARTZ: This is in  
17 response to your -- to his  
18 testimony regarding -- his  
19 testimony to your question about  
20 where is this data. And so he has  
21 a right to tell you. And he said  
22 Metzker 1998. So I marked --

23 MR. REINES: I object to the  
24 document. It's belated.

25 MR. SCHWARTZ: That's fine.

1 STEVEN MENCHEN, Ph.D.

2 Okay. And this is directly in  
3 relation to a question that  
4 Mr. Reines asked Dr. Metzker --  
5 Dr. Menchen and Dr. Menchen's  
6 response to that question.

7 Q. Is this the Metzker 1998  
8 reference that you were referring to  
9 yesterday?

10 A. Yes.

11 Q. Can you point me to the  
12 example that you were thinking of  
13 yesterday where a read through band  
14 and an efficiency test band  
15 co-exist?

16 A. Figure 3 on page 816.

17 Q. And where space in Figure 3  
18 do you see their efficiency test  
19 band and the coexisting read through  
20 band?

21 A. If you look at 5A and B.  
22 So you can see -- on 5A you can see  
23 a -- an efficiency test band that's  
24 about, I don't know, about 7/8ths of  
25 the way down on that gel. And then

STEVEN MENCHEN, Ph.D.

the termination band is just above it. And if you look near the top you can see the -- the read through band, those three bands.

And then on the next, on B, is basically the same sample that this study took the sample and did what they call a mop-up, which I'm not going to go into the details of, a mop-up where they remove -- they found a way to remove the contaminating natural nucleotide.

And what the B shows is the presence of the efficiency test band and the -- the termination band with no read through band. And you can see if you kind of mentally look at the ratios of those two, the A is actually a bit lighter than the B, but if you look at the efficiency test band and the termination band, the bottom two, and then you look at B, the efficiency test band and the termination band, those ratios look

1 STEVEN MENCHEN, Ph.D.

2 about the same.

3 So the take-home message here  
4 is that the presence or absence of  
5 the natural nucleotide which created  
6 the read through band really doesn't  
7 have any affect on the -- on the  
8 presence or absence of the  
9 efficiency test band.

10 Q. Okay.

11 MR. SCHWARTZ: I'd -- I'd like  
12 to go off the record and take a  
13 very short break so that I can get  
14 the right exhibit, the last -- my  
15 last exhibit.

16 MR. REINES: It's your last  
17 thing.

18 MR. SCHWARTZ: It's my last.

19 MR. REINES: Okay, sure.

20 THE VIDEOGRAPHER: The time on  
21 the video monitor is 1:29 p.m. We  
22 off the record.

23 (Whereupon, there is a recess  
24 in the proceedings.)

25 THE VIDEOGRAPHER: We are back



1 STEVEN MENCHEN, Ph.D.

2 on the record. The time on the  
3 video monitor is 1:33 p.m.

4 Q. Dr. Menchen, let's go back  
5 to your declaration in the method  
6 case, and please, again, turn to  
7 page 29.

8 A. Okay.

9 Q. Do you remember yesterday  
10 Mr. Reines took you to this  
11 paragraph and asked you some  
12 questions?

13 A. Yes, he did.

14 Q. And I'm going to be marking  
15 Exhibit 2130. Would you mind  
16 handing that -- let's mark it 2132.

17 (Exhibit 2132, Full version of  
18 The NEB Transcript, marked for  
19 identification, as of this date.)

20 Q. So I'm marking  
21 Exhibit 2132, which is the full  
22 version of Exhibit 2084 in your  
23 declaration. Please turn to page 13  
24 where you quoted the portion of the  
25 disclosure relating to CircumVent.

1 STEVEN MENCHEN, Ph.D.

2 MR. REINES: I'm sorry to ask  
3 you this, but just so I understand  
4 what we are doing here. This NEB  
5 transcript document which I have as  
6 new Exhibit 2132, this is a  
7 complete version of something  
8 that's already been an exhibit; is  
9 that correct?

10 MR. SCHWARTZ: You objected to  
11 other exhibit as being incomplete  
12 so we are now providing you with  
13 the complete one.

14 MR. REINES: Okay.  
15 Understood. All right. I'll  
16 object subject to hearing what the  
17 testimony is.

18 Q. Please turn to page 13  
19 where you quoted the portion of the  
20 disclosure relating to CircumVent.  
21 And please read that section to  
22 yourself.

23 A. Okay.

24 Q. Is there anything that  
25 states that Sanger sequencing

1 STEVEN MENCHEN, Ph.D.

2 requires high efficiency

3 incorporation?

4 A. No.

5 Q. And my last question.

6 Mr. Reines asked you about  
7 allyl ethers on page 24 in Tsien.  
8 Do you recall that?

9 A. I recall that.

10 Q. And would you go to Tsien,  
11 please, 1013, Exhibit 1013. It's  
12 Tsien.

13 A. I can't find it. Let me  
14 try one more time.

15 Q. Oh, there it is.

16 A. It's right there. Sorry.  
17 Page 24?

18 Q. Please -- please turn to --  
19 let me -- let me start again.

20 Yesterday Mr. Reines asked you  
21 or -- Mr. Reines asked you about  
22 allyl ethers on page 24 in Tsien.  
23 Do you remember that?

24 A. Yeah, I remember that.

25 Q. Does allyl ethers also

1 STEVEN MENCHEN, Ph.D.

2 appear to page 28 in Tsien?

3 A. Yes, it does.

4 Q. Have you considered that  
5 prior to today?

6 A. Yes, I have.

7 Q. And do you have views  
8 regarding Tsien's reference to allyl  
9 ethers on page 28?

10 A. Yes, I do.

11 Q. And what are those views?

12 MR. REINES: I'm going to  
13 object this is inappropriate  
14 supplement. If he has the views  
15 already, then there's no reason  
16 they should be added now.

17 MR. SCHWARTZ: This is in  
18 response to your asking him about  
19 legal ethers on page 24.

20 MR. REINES: It's an  
21 inappropriate expansion on his  
22 views on Tsien is our objection.

23 A. So my view is that the  
24 allyl ethers on page 28 represent  
25 the same group of molecules -- or

1 STEVEN MENCHEN, Ph.D.

2 the same genus of molecules as the  
3 allyl ethers that he talks about on  
4 page 24, except that the allyl  
5 ethers on page 24 is an open-ended  
6 genus of molecules. And on page 28,  
7 he actually refines -- he narrows  
8 the genus down to, from two to about  
9 20 atoms and preferably from three  
10 to about ten atoms.

11 MR. REINES: Is that it?

12 Q. Are you done?

13 A. Yeah.

14 MR. SCHWARTZ: Okay. No  
15 further questions.

16 BY MR. REINES: (Continued)

17 Q. First I'd like to discuss  
18 Dr. Romesberg's declaration. During  
19 my examination of you, you said that  
20 that was not something you reviewed  
21 in preparation of your opinions in  
22 your October declaration.

23 Do you recall that?

24 A. Yeah, I recall that.

25 Q. When counsel for Columbia

1 STEVEN MENCHEN, Ph.D.

2 was showing you documents on that  
3 and asked you whether you had  
4 reviewed the Romesberg declaration  
5 as part of your work to prepare your  
6 opinions in this case you said I  
7 guess so.

8 Do you recall that?

9 A. Yes.

10 Q. Do you actually remember  
11 reviewing the Romesberg declaration?

12 A. I absolutely remember  
13 reviewing it.

14 Q. Do you know when you  
15 reviewed it?

16 A. I actually don't remember  
17 when I -- when I reviewed it,  
18 whether it was before or after the  
19 submission of the declarations. And  
20 that -- that was the problem.

21 Q. And that's still the case,  
22 right, in terms of your memory?  
23 Sitting here now you don't remember  
24 when you reviewed the Romesberg  
25 declaration; is that correct?

1 STEVEN MENCHEN, Ph.D.

2 A. I must have reviewed it  
3 before -- I know I looked at it in  
4 detail several times.

5 Q. I'm just asking you --

6 A. And then so I assume if  
7 it's in my declaration I must have  
8 read it before or I wouldn't have  
9 put it in.

10 Q. I'm not asking about  
11 assumptions. I'm asking do you in  
12 your memory remember when you  
13 reviewed the Romesberg declaration  
14 honestly?

15 A. I can't give you a specific  
16 date.

17 Q. Whether it was before or  
18 after the preparation of your  
19 submission you have no memory,  
20 correct?

21 A. My memory is that I  
22 reviewed it before and after.

23 Q. So you do -- now you are  
24 saying you do have a memory of that?

25 A. After -- after being

1 STEVEN MENCHEN, Ph.D.

2 reminded, yeah, I did review it  
3 before and after.

4 Q. I'm not asking you whether  
5 you can make assumptions about  
6 whether you reviewed it or not. I'm  
7 asking do you have a memory of  
8 actually reviewing the Romesberg  
9 declaration before you submitted  
10 yours?

11 MR. SCHWARTZ: Asked and  
12 answered.

13 A. I don't remember a specific  
14 day that I reviewed it.

15 Q. Okay. Can you answer  
16 anything more than that?

17 A. I reviewed it several  
18 times.

19 Q. Do you know whether it was  
20 before or after you submitted your  
21 declaration in terms of your actual  
22 memory sitting here now?

23 MR. SCHWARTZ: Asked and  
24 answered.

25 A. I can't remember a specific



1 STEVEN MENCHEN, Ph.D.

2 day, the specific days that I  
3 reviewed it or --

4 Q. Can you recall whether it  
5 was before -- let me just be clear.  
6 Your declaration was submitted in  
7 October 2018; is that correct?

8 A. That's -- that's correct.

9 Q. Can you remember sitting  
10 here now in terms of your memory  
11 whether you reviewed the Romesberg  
12 declaration before or after you made  
13 that submission, just in terms of  
14 your memory?

15 A. Yeah, I reviewed it before.  
16 You know, looking at the date, I  
17 reviewed it before.

18 Q. When you say looking at the  
19 date, you are saying looking at your  
20 declaration?

21 A. Looking at the date of my  
22 declaration and all of the stuff  
23 that I had to read through. There  
24 was a lot of stuff and that was one  
25 of them. And I did look through it.

1 STEVEN MENCHEN, Ph.D.

2 Q. Do you remember how the  
3 Romesberg declaration influenced the  
4 opinions in your declaration?

5 MR. SCHWARTZ: Objection,  
6 form.

7 A. I mean it's summarized in  
8 my declaration.

9 Q. Do you have any memory  
10 beyond that?

11 MR. SCHWARTZ: Objection,  
12 form.

13 A. I'd have to look through my  
14 declaration to remind me exactly  
15 what the influences were.

16 Q. Do you recall during your  
17 testimony when I asked you very  
18 specifically about the Romesberg  
19 declaration, you said you didn't  
20 have access to it when you were  
21 preparing your declaration?

22 A. I said that.

23 Q. Right. I'd like to -- when  
24 you said that you were under oath,  
25 correct?

1 STEVEN MENCHEN, Ph.D.

2 A. That's right.

3 Q. And you were doing your  
4 best to be as honest and accurate as  
5 you could?

6 A. That's right, I was, yes.

7 Q. All right. Let me ask you  
8 some questions about the person of  
9 ordinary skill in the art. You  
10 asked -- on cross examination from  
11 Columbia's counsel you said you were  
12 asking questions about what the date  
13 was for the perspective of a person  
14 of ordinary skill in the art.

15 Do you recall that?

16 A. Yes.

17 Q. And you stated that all --  
18 every time you used the term "person  
19 of ordinary skill in the art" you  
20 were talking about one specific time  
21 period.

22 Do you recall that?

23 A. Yes.

24 Q. Do you actually remember  
25 whether or not every time you were

1 STEVEN MENCHEN, Ph.D.

2 using person of ordinary skill in  
3 the art whether it was really  
4 limited to a particular time period  
5 in truth given all the questioning  
6 that I asked you?

7 A. I don't remember a case  
8 where it wasn't -- that it didn't  
9 refer to that, a question.

10 Q. Well, when I was asking you  
11 about the 2005 Ju article, do you  
12 remember that?

13 A. Yeah, I do.

14 Q. And do you remember me  
15 using the term "person of skill in  
16 art" in connection with that?

17 MR. SCHWARTZ: Objection,  
18 form.

19 A. I don't remember that. I  
20 don't remember you using that.

21 Q. Do you have any idea  
22 whether every single time you used  
23 the term or answered a question  
24 about a person of skill in the art  
25 you were talking about before 2000,

1 STEVEN MENCHEN, Ph.D.

2 can you really sit here honestly and  
3 say that every single time it was  
4 before that time period?

5 A. Every time that -- every  
6 time we talked about prior art,  
7 yeah. Yeah. If -- if you bring up  
8 any question I can tell you whether,  
9 you know, whether it referred to  
10 before 2000.

11 Q. Okay. So in other words,  
12 in order for you to say whether your  
13 reference to a person of ordinary  
14 skill in the art was before or after  
15 the year 2000, you would need to  
16 look at the question and answer to  
17 make a decision; is that correct?

18 A. I believe that when you  
19 mentioned the 2007 article --

20 Q. I don't think it's 2007.  
21 Do you mean 2005?

22 A. 2005 article that you did  
23 mention a person with ordinary skill  
24 in the art. That's the only one  
25 that I can remember that that

1 STEVEN MENCHEN, Ph.D.

2 happened for -- for that time  
3 period.

4 Q. Isn't it true that with  
5 respect to the time frame for the  
6 person of ordinary skill in the art  
7 you can't say that every time that  
8 you used that term you were  
9 referring to before October 2000;  
10 isn't that correct? You can't make  
11 that kind of authoritative  
12 statement, can you?

13 MR. SCHWARTZ: Objection,  
14 asked and answered.

15 A. Yeah, I think I can.

16 Q. So you are saying that  
17 someone that goes through the  
18 transcript can rely on you and say  
19 that every single time that there's  
20 a reference to person of ordinary  
21 skill in the art it's always before  
22 October 2000 --

23 A. I believe.

24 Q. -- and you're willing to  
25 swear to that under oath?

1 STEVEN MENCHEN, Ph.D.

2 A. I believe I gave you an  
3 example of when it referred to after  
4 2000 relating to an article that was  
5 published after 2000.

6 Q. Okay. So you'll  
7 acknowledge that when you just gave  
8 testimony that was brought out by  
9 counsel for Columbia said that every  
10 single time you referred to a person  
11 of ordinary skill in the art you  
12 referred to before October 2000,  
13 that was not accurate testimony,  
14 right?

15 MR. SCHWARTZ:  
16 Mischaracterizes witness's  
17 testimony.

18 A. I think that I gave you  
19 an example of a case where that  
20 wasn't -- where that wasn't true but  
21 every other -- every other one that  
22 I can think of, yeah.

23 Q. Do you have in mind now  
24 every single answer that you gave in  
25 the deposition over the last two

1 STEVEN MENCHEN, Ph.D.

2 days where the term person of skill  
3 in art was used? Is that something  
4 you can think of right now?

5 A. No, I don't remember every  
6 one.

7 Q. And with respect to the  
8 statement that you made in response  
9 to questioning from Columbia where  
10 you said that every single time you  
11 used the term person of ordinary  
12 skill in the art you are referring  
13 to October 2000, that was not  
14 accurate, I'm just asking you to  
15 acknowledge that?

16 A. I gave you an exception.  
17 Other than that, it was accurate.

18 Q. So you are certain that  
19 there's no other exceptions?

20 A. I can't say that for sure.

21 Q. So when you testified that  
22 in every single instance when you  
23 answered regarding a person of  
24 ordinary skill in the art you were  
25 referring to before October of 2000



1 STEVEN MENCHEN, Ph.D.

2 that's not the kind of testimony  
3 someone should be able to rely on,  
4 right?

5 MR. SCHWARTZ: Objection,  
6 mischaracterizes witness's  
7 testimony.

8 MR. REINES: We will get into  
9 that.

10 A. I guess I don't understand  
11 your point.

12 Q. My point is, when you were  
13 asked whether every single time you  
14 referred to a person of ordinary  
15 skill in the art you were referring  
16 to a person of ordinary skill in the  
17 art prior to October 2000 that  
18 wasn't accurate? I'm just asking  
19 you to acknowledge that. Will you  
20 acknowledge that?

21 A. Yeah, okay. That was not  
22 accurate.

23 Q. Right. I'd like to ask you  
24 questions about the Metzker 1998  
25 paper that just came up. If you

1 STEVEN MENCHEN, Ph.D.

2 could show us -- if you could turn  
3 to Exhibit 2114, which is your  
4 report at 18 and specifically  
5 paragraph 31.

6 Do you have that in front of  
7 you?

8 A. Yeah, I do.

9 Q. And this is where you are  
10 discussing Metzker, correct?

11 A. That's correct.

12 Q. And you used the term  
13 "Metzker" throughout here. When you  
14 are referring to Metzker here you  
15 are referring to the Metzker 1994  
16 paper; isn't that right?

17 A. That's correct.

18 Q. And when I asked you about  
19 the cartoon that's at Figure 2, I  
20 was asking you whether there was any  
21 experimental results in the Metzker  
22 1994 paper that supported that.

23 Do you recall that?

24 A. Yes, I do recall that.

25 Q. And your answer was it

1 STEVEN MENCHEN, Ph.D.

2 wasn't but it was in the Metzker  
3 1998, correct?

4 A. That's correct.

5 Q. And with respect to the  
6 Metzker 1998 paper -- why don't we  
7 get that out in front of us. It's  
8 Exhibit 2131. You had this paper  
9 when you were preparing your  
10 declaration; is that correct?

11 A. I did have this paper when  
12 I was preparing my declaration.

13 Q. And it's up to you -- you  
14 had studied; is that right?

15 A. I've looked at it, yeah.

16 Q. And you wanted to include  
17 this in your declaration to support  
18 your cartoon 2?

19 A. Yeah. I decided not to.

20 Q. But you -- that wasn't my  
21 question. My question was at least  
22 at one point when you were preparing  
23 your declaration you wanted to  
24 include Metzker 1998 to support your  
25 cartoon 2, correct?

1 STEVEN MENCHEN, Ph.D.

2 A. No. I would have put it --  
3 or I would have put it in. I would  
4 assume that this would have been  
5 enough.

6 Q. Do you recall in your  
7 direct examination you testified  
8 that you didn't include an analysis  
9 of the Metzker 1998 paper because  
10 you ran out of time, do you recall  
11 that? I'm just asking if you recall  
12 the testimony.

13 A. I do -- I do recall the  
14 testimony.

15 Q. Okay. And was that  
16 testimony truthful?

17 A. Oh, yes.

18 Q. And in fact, you had the  
19 Metzker 1998 paper and you  
20 considered citing it to support your  
21 efficiency test band analysis and  
22 you ultimately decided against doing  
23 that, correct?

24 A. We didn't have time to put  
25 it in.

1 STEVEN MENCHEN, Ph.D.

2 Q. When you say you didn't  
3 have time to put it in, how long  
4 before you finalized your report did  
5 you have Exhibit 2131?

6 A. I don't remember.

7 Q. Was it a matter of weeks,  
8 months?

9 A. I don't remember.

10 Q. Was there anything limiting  
11 your ability to discover and analyze  
12 the Metzker 1998 paper safely in  
13 advance of your deadline?

14 A. I'm sorry?

15 Q. Was there anything that  
16 interfered with your ability to  
17 find, locate the Metzker 1998 paper,  
18 consider it and include it in your  
19 declaration, was there anything that  
20 impeded you from doing that?

21 MR. SCHWARTZ: Objection,  
22 form.

23 A. I don't remember why we  
24 didn't include it, except that there  
25 wasn't time.

1 STEVEN MENCHEN, Ph.D.

2 Q. I'd like to direct your  
3 attention to Figure 3. And you see  
4 the second G from the bottom, next  
5 to it there's bands in the B lane  
6 under 5, 25 and 50 concentrations?

7 A. I see those.

8 Q. Okay. And your testimony  
9 is those efficiency test bands are  
10 inconsistent with complete  
11 termination; is that right?  
12 Efficiency test bands are  
13 inconsistent with complete  
14 termination?

15 A. They are consistent with  
16 incomplete termination.

17 Q. Are efficiency test bands,  
18 if you have complete termination,  
19 should there be efficiency test  
20 bands, what you are calling  
21 efficiency test bands?

22 A. There shouldn't be.

23 Q. There should not be, right?

24 A. Right.

25 Q. And do you see under Figure

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2 3 it says, "Complete termination of  
3 the methyl"? It's in bold  
4 immediately under the diagram.

5 A. Oh, I see that, yeah.

6 Q. So Metzker is telling you  
7 that the termination of the methyl  
8 in the B channels is complete  
9 termination, correct?

10 A. He is for 25 micromolar.  
11 So this is a titration just like we  
12 discussed before. And you can look  
13 at the -- he's doing them at 5  
14 micromolar, 25 micromolar, and 50  
15 micromolar. So you can see at 5  
16 micromolar that the presence of the  
17 efficiency test band because it's  
18 incomplete termination.

19 So what you have to remember  
20 is this is a radioactive assay. So  
21 the -- you are going to see very,  
22 very faint, you know, really low  
23 percentages of materials that are  
24 going to show up in radioactivity.

25 Q. In channel B5 --

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2 A. So if I can complete.

3 Q. Yeah, sure.

4 A. So in A and B for 5, 5  
5 micromolar, which isn't enough to  
6 get complete termination, especially  
7 in the time you can see the density  
8 of the efficiency test band in that  
9 one. And then you can see where if  
10 you look at 5B, which is the darker  
11 one.

12 So these were exposed for --  
13 he obviously used different  
14 concentrations so when you look at  
15 the exposures they are going to look  
16 different. But you have to kind of  
17 mentally look at the -- at the  
18 ratios between the two bands that we  
19 are talking about.

20 So at 5, which you would get  
21 incomplete termination, you can  
22 see -- you can definitely see those  
23 two bands. When you look at 25  
24 micromolar you can see that -- there  
25 might be some faint band there but



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2 you can see that the -- in both  
3 cases where you have the A, you  
4 basically don't see any band  
5 compared to the termination band.  
6 So I'm looking at 25 micromolar.

7 When you look at B you can see  
8 that there's a huge amount of  
9 terminated material there and  
10 there's just a trace amount of  
11 efficiency test band, hardly any.

12 So basically because he's  
13 using such a high concentration,  
14 these bands tend to show up but they  
15 might only be a percent or half a  
16 percent or something like that.

17 So he does show a complete  
18 termination even though you do see a  
19 faint amount of this band but it's  
20 just -- you are always going to see  
21 a little bit.

22 Q. There's always going to be  
23 some efficiency test band, is that  
24 what you are saying?

25 MR. SCHWARTZ: Objection,

1 STEVEN MENCHEN, Ph.D.

2 mischaracterizes testimony.

3 A. What I'm saying is that  
4 depending on what concentration of  
5 stuff that you -- that you want to  
6 test in there, the more concentrated  
7 you make it, the more likely you are  
8 to see failure peaks compared to the  
9 termination peak, which is going to  
10 be really, really intense.

11 Q. Do you recall testifying  
12 that with both with respect to 5,  
13 25, and 50 that there's an  
14 efficiency test band for each in  
15 channel B, do you recall that  
16 testimony?

17 MR. SCHWARTZ: Objection,  
18 asked and answered.

19 Q. When I first showed you  
20 this today, do you recall that?

21 A. Yeah.

22 Q. All right.

23 A. There was an efficiency  
24 test band in each.

25 Q. And you'll agree that the

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efficiency test band at 50B is greater than the efficiency -- what you are calling an efficiency test band at 25B?

A. I don't think you can make that statement. So what you have to remember is that there's a dynamic range on these gels, and these are radiogram gels. So what you need to do is look at the ratio of the -- of the test band to the -- to the termination band. And if you exceeded the dynamic range of the system basically you are saturated.

So everything -- once you are saturated, everything is going to look the same, all the bands. So you throw a huge amount of material on there and the reason you do that is not because you want to see how much of the terminated band you have but you want to see if you can see any of the efficiency test band.

So the fact that you have --

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2 that it looks like you have a little  
3 bit darker band in the 50B compared  
4 to the little bit to the lighter  
5 band in the 25B, that just means  
6 that he loaded more material in the  
7 50 than he did in the 25. They are  
8 actually going to look the same  
9 because they are saturated.

10 Q. So you are saying an  
11 efficiency test band can be the  
12 product of saturation in the system  
13 as compared to incomplete  
14 termination?

15 MR. SCHWARTZ:  
16 Mischaracterizes testimony.

17 A. I didn't say that.

18 Q. I'm asking you the  
19 question.

20 A. You mean your ability to  
21 see it?

22 Q. Yes.

23 A. Yeah. You will eventually  
24 see it.

25 Q. And with respect to -- so

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2 is what's at 5B, are you saying that  
3 that's -- is that a real efficiency  
4 test band or is that -- how can  
5 you -- well, let me ask you this.  
6 Do you have a way of saying how dark  
7 the efficiency test band needs to be  
8 before it shows complete verse  
9 incomplete termination, do you have  
10 any system for that?

11 A. No, I don't know of any  
12 system for that. At least in this  
13 assay.

14 Q. Can you meaningfully look  
15 at these gels and determine from the  
16 presence, or, you know, the degree  
17 of lightness or darkness of an  
18 efficiency test band whether there's  
19 complete termination or not?

20 A. What you need to do is look  
21 at the size of the terminated band  
22 and you can see for the 5 micromolar  
23 they are obviously smaller.

24 Q. What's obviously smaller?

25 A. Physically you can tell.

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2 What?

3 Q. I'm just saying can you  
4 tell --

5 A. If you -- if you look at  
6 the size of the peak for the 5B and  
7 then look at the size of the people  
8 for 25B, the 25B is obviously much  
9 darker, it's bigger, visually.

10 Q. That's obvious to you?

11 A. Looks that way to me.

12 Q. Okay. Can you tell from  
13 the, how dark or light the  
14 efficiency, what you are calling an  
15 efficiency test band is whether or  
16 not there's completion or not to the  
17 termination?

18 A. What -- what you want to do  
19 is, especially if you have something  
20 that's inefficiently incorporated,  
21 you would see the efficiency test  
22 band be darker than the termination  
23 band. So, you know, I don't think  
24 you can get the -- get it to within  
25 5 percent but you can certainly tell

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2 gross features.

3 Q. I'm just asking you without  
4 doing the comparison between the  
5 darkness of what you are calling the  
6 efficiency test band and the  
7 termination band, just from the  
8 presence of what you are calling an  
9 efficiency test band, can you tell  
10 whether or not there's been complete  
11 or incomplete termination?

12 A. So as I said before, you  
13 have to look at it within the  
14 context of the termination peek.

15 Q. And with respect to 50B you  
16 don't deny that is what you would  
17 call an efficiency termination band  
18 there, do you?

19 A. It looks like there's a  
20 trace.

21 Q. When you say a trace, is  
22 that what you are now saying?

23 A. For 50B, it looks like  
24 there's a trace, yeah.

25 Q. So before when I asked you

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2 whether there was what you call an  
3 efficiency termination band for 50B  
4 and you said yes, you really meant  
5 to say only a trace?

6 A. I think only a trace is the  
7 same as yes.

8 Q. Okay. And is it your  
9 opinion based on whatever you are  
10 saying you can construe from this  
11 gel that channel 5B is complete or  
12 incomplete termination according to  
13 you?

14 A. That's definitely  
15 incomplete termination.

16 Q. Okay. If you'd look to the  
17 right of Figure 3, do you see where  
18 it says at the bottom corner, if you  
19 look over to the text in the far  
20 right column it says, "The  
21 incorporation of the methyl by  
22 AMV-RT shows complete termination  
23 without nucleotide read through  
24 Figure 3 lanes B"?

25 Do you see that?



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2 A. Where is it?

3 Q. At the bottom right-hand  
4 corner of the text.

5 A. It's at the very bottom?

6 Q. It's five to six lines --  
7 four to five lines from the bottom.

8 A. It says, "following  
9 enzymatic mop-up." Is that what  
10 it -- what it says?

11 Q. Do you see where Metzker  
12 says that the incorporation of the  
13 methyl shows complete termination  
14 without natural nucleotide read  
15 through for figures 3 lanes B?

16 Do you see that? Do you  
17 really not see that?

18 A. Let -- let me find it.

19 Q. I don't know what to say  
20 other than it's in the rightmost  
21 column four to five lines from the  
22 column?

23 MR. SCHWARTZ: I think it's  
24 down here.

25 A. It says, "Following

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2 enzymatic mop-up, the incorporation  
3 of 3'-O-methyl-dATP by AMV-RT shows  
4 complete termination without natural  
5 nucleotide read-through."

6 Q. Do you see where Metzker is  
7 explaining that the methyl is  
8 completely terminated in Figure 3  
9 lanes B?

10 A. I see that.

11 Q. And lanes B there's --  
12 that's in plural; is that correct?

13 A. It's in plural.

14 Q. And there's three B lanes,  
15 5, 25, and 50; is that correct?

16 A. That's right.

17 Q. Okay. With re- -- during  
18 yesterday and today I have asked you  
19 a series of questions relating to  
20 these proceedings. Were you  
21 accurate in your testimony? Was --  
22 was your testimony truthful and  
23 accurate to me during today and  
24 yesterday when I asked you questions  
25 and you gave answers?

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2 A. To the best of my  
3 knowledge.

4 Q. And is there anything that  
5 was -- came up in cross examination  
6 that led you to believe that  
7 anything you said was not truthful  
8 and accurate in your testimony?

9 A. Just the issue of, what we  
10 discussed about the POSA referring  
11 to the -- the Metzker 2006 paper.

12 Q. Anything else?

13 A. I don't -- I don't think of  
14 anything else.

15 MR. REINES: Nothing further.

16 All right. Thank you, everyone.

17 THE VIDEOGRAPHER: We are  
18 going off the record at 2:07 p.m.  
19 This concludes today's testimony  
20 given by Dr. Steven Menchen. The  
21 total number of media units used  
22 was three and will be retained by  
23 Veritext Legal Solutions.

24 (Continued on next page.)

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STEVEN MENCHEN, Ph.D.

We are off the record. Thank  
you.

(Time noted: 2:07 p.m.)

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STATE OF NEW YORK )  
 ) ss  
COUNTY OF NEW YORK )

I, STEVEN MENCHEN, Ph.D., the  
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foregoing testimony of the pages of  
this deposition, do hereby certify  
it to be a true and correct  
transcript, subject to the  
corrections, if any, shown on the  
attached page.

-----  
STEVEN MENCHEN, Ph.D.

Sworn and subscribed to before me,  
this \_\_\_\_\_ day of \_\_\_\_\_,  
2019.

-----  
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I, ERICA L. RUGGIERI, RPR and  
a Notary Public within and for the  
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That I reported the  
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transcript is a true record of such  
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I further certify that I am  
not related by blood or marriage, to  
any of the parties in this matter  
and that I am in no way interested  
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IN WITNESS WHEREOF, I have  
hereunto set my hand this 16th day  
of January, 2019.



ERICA L. RUGGIERI, RPR, CSR, CLR

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF SEPTEMBER 1, 2016. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.



VERITEXT LEGAL SOLUTIONS  
COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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