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Transcript of Lawrence Nathan Tumey, Ph.D.

Date: May 9, 2025

Case: Synaffix B.V. -v- Hangzhou DAC Biotech Co., Ltd.

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EX1091
SYNAFFIX B.V.
IPR2022-01531

WORLDWIDE COURT REPORTING & LITIGATION TECHNOLOGY

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 -----
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD
4 -----

5 SYNAFFIX B.V.,

6 Petitioner,

7 v.

8 HANGZHOU DAC BIOTECH CO., LTD.,

9 Patent Owner.
10 -----

11 Case No. IPR2022-01531

12 U.S. Patent No. 10,131,682
13

14 DEPOSITION OF LAWRENCE NATHAN TUMEY, Ph.D.

15 APPEARING REMOTELY FROM NEW YORK, NEW YORK

16 FRIDAY, MAY 9, 2025

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18
19

20 Job No.: 583705

21 Pages 1 - 40

22 Reported by: Adrienne M. Mignano, RPR

1 Deposition of LAWRENCE NATHAN TUMEY, Ph.D.,
2 held via Zoom videoconferencing, pursuant to Notice,
3 before Adrienne M. Mignano, a Registered Professional
4 Stenographic Reporter and Notary Public.

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A P P E A R A N C E S

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1 Whereupon,

2 LAWRENCE NATHAN TUMEY, Ph.D.,
3 being first duly sworn or affirmed to testify to
4 the truth, the whole truth, and nothing but the
5 truth, was examined and testified as follows:

6 EXAMINATION BY COUNSEL FOR THE PETITIONER
7 BY DR. HOUSTON:

8 Q Good morning, sir. Could you start
9 by stating your full name for the record.

10 A Lawrence Nathan Tumey.

11 Q Good morning, Dr. Tumey. I think you
12 know I'm Michael Houston from Foley & Lardner,
13 and we're here today for a deposition regarding
14 a second declaration you submitted in this
15 proceeding, Exhibit 2047.

16 (Exhibit 2047 previously marked for
17 identification and attached to the transcript.)

18 Q Is that your understanding?

19 A Yes.

20 Q And I appreciate that we have
21 conducted a deposition previously in this
22 matter, so I won't go through all of those

1 basics again unless you need me to, but I will
2 just remind you that even though we are doing
3 this deposition remotely today using video, you
4 are still under oath and a court reporter is
5 still typing down everything that is said, or
6 trying to, and so I would ask that you please
7 just remember to speak slowly and for both of us
8 to do our best to not speak over each other.

9 Is that agreeable to you?

10 A Yes, it is.

11 Q Also, because we are conducting this
12 deposition remotely, I would ask you whether or
13 not you have any documents before you.

14 A There are two documents here. One is
15 the declaration -- one is my new declaration and
16 one was my first declaration, paper copies of
17 those.

18 Q Understood. So no other documents
19 besides those two?

20 A Correct. No other documents besides
21 those.

22 Q And can I ask, do you have any other

1 windows open on your computer screen besides the
2 ones you are using for this session?

3 A Just the Zoom and the PDF, the Adobe
4 that we were just using.

5 Q Understood. Thank you.

6 And then, finally, do you have any
7 phones or other communication devices with you
8 today?

9 A I do.

10 Q Okay. I would just ask that you
11 refrain from communicating with anyone via text,
12 e-mail, chat, whatever, during the deposition,
13 at least not without disclosing such
14 communications to all of the counsel on this --
15 in this session. Can you agree to that?

16 A Yes.

17 Q And I'll just remind you also that
18 during any breaks or the like, until I'm done
19 with my questioning, you're not supposed to
20 discuss the substance of your deposition with
21 anyone. Do you understand that as well?

22 A Yes, I do.

1 Q Okay. And then, finally, I would
2 just invite you to please immediately let anyone
3 and everyone know if you experience any kind of
4 technical difficulties or if there is some
5 difficulty hearing me or anyone else during this
6 session today. Is that okay?

7 A Yes.

8 Q Okay. Other than with your
9 attorneys, have you discussed the substance of
10 your second declaration or your first
11 declaration with anyone prior to today's
12 deposition?

13 A No.

14 Q Is there any reason today that you
15 cannot answer my questions truthfully and
16 accurately?

17 A No.

18 Q Dr. Tumey, would you agree that
19 monoclonal antibodies are a typical example of a
20 cell-binding agent?

21 MS. MATTES: Objection. Scope.

22 A I agree that antibodies are widely

1 used as cell-binding agents.

2 Q I'd like to ask you a few questions
3 about antibodies, and maybe just to -- so that
4 we're both on the same page, I'm fine to limit
5 our conversation to antibodies that are
6 cell-binding agents for purposes of the '682
7 patent. Is that okay?

8 A Yes.

9 Q And, actually, I realize even -- I'm
10 being a little bit less precise with my words
11 than I wanted to be. I would like to ask you
12 about monoclonal antibodies specifically.

13 A Okay.

14 Q Okay?

15 When one wants to attach a linker to
16 a monoclonal antibody, a common way to do that
17 is to attach the linker to a thiol group; is
18 that correct?

19 MS. MATTES: Objection. Scope.
20 Incomplete hypothetical.

21 A That is a common way for attaching
22 linkers to antibodies, yes.

1 Q And this is one of the mechanisms or
2 modes of attachment that the '682 patent
3 reports, correct?

4 A Yes, it is.

5 Q Let's look at the -- well, let me ask
6 one question and then we're going to look at a
7 document.

8 Are thiol groups inherently present
9 in monoclonal antibodies or are they added in
10 some way?

11 MS. MATTES: Objection. Scope.

12 A They are usually masked as
13 disulfides, but they can be present inherently.

14 Q Okay. I'm going to put into the Chat
15 a copy of the patent that is at issue here.

16 DR. LOU: For the record, I'm handing
17 over a hard copy of the patent to the witness as
18 well, just so you know.

19 DR. HOUSTON: Oh, wonderful, okay.
20 You have that?

21 DR. LOU: Yes.

22 DR. HOUSTON: That's great.

1 DR. LOU: It's 1001, right?

2 DR. HOUSTON: Yes.

3 DR. LOU: Okay.

4 (Exhibit 1001 previously marked for
5 identification and attached to the transcript.)

6 BY DR. HOUSTON:

7 Q Dr. Tumey, it's perfectly fine if you
8 would prefer to work from the paper copy. But
9 maybe just for completeness, can you confirm
10 that you have a PDF of the patent, which is
11 Exhibit 1001? Did that come through?

12 A Yes, it did.

13 Q In that patent, I would ask you to
14 turn to -- it's PDF page 21. It is labeled
15 sheet 13 of 23, and -- yes, so it should be
16 labeled page 21 at the bottom as well.

17 A Yes, I see it.

18 Q Okay, great.

19 I'd like to direct your attention to
20 the scheme, if you call it, that is the third
21 one up from the bottom there.

22 A Yes.

1 Q On that third-up-from-the-bottom
2 scheme, there is a depiction over on the
3 right-hand side that says, "Antibody + DTT," and
4 then it has an arrow pointing to something that
5 I believe is meant to depict a monoclonal
6 antibody with a thiol group.

7 Can you confirm that?

8 MS. MATTES: Objection. Outside the
9 scope of his declaration.

10 A Yes, I see that.

11 Q Do you have an understanding of what
12 that is indicating?

13 A Yes, I do.

14 Q And what is that?

15 MS. MATTES: Same objection.

16 A Antibodies have four disulfide
17 bridges that hold them together. And a
18 frequent -- frequently used way to conjugate
19 molecules to antibodies is by cleaving those
20 disulfide bridges to form thiols. And this
21 reagent, DTT, accomplishes that.

22 Q Do you have an understanding of

1 what -- sorry, let me ask that a different way.
2 Does DTT stand for something or is that an
3 abbreviation for something?

4 A It is an abbreviation. It stands for
5 dithiothreitol.

6 Q Okay. Maybe we could spell that for
7 the court reporter real quick, if you know.

8 A I'll do my best.
9 D-I-T-H-I-O-T-H-E -- sorry, T-H-R-E-O-T-O-L.

10 Q Thank you.

11 A For words like that, I'm also happy
12 to put it in the Chat if that would be easier.
13 It may make things more complicated, I don't
14 know.

15 Q We can check with the court reporter
16 at some point and see if she needs to see it
17 written out, but thank you. For purposes of
18 this discussion, which won't be long, maybe we
19 can just use the abbreviation DTT. Would that
20 be okay?

21 A Yes.

22 Q And I believe you said that DTT

1 cleaves the disulfide bridges in the monoclonal
2 antibodies to create the thiol groups; is that
3 right?

4 MS. MATTES: Objection to the extent
5 it mischaracterizes his testimony.

6 A Yes. DTT cleaves the disulfide
7 bridges, resulting in the formation of thiol
8 residues.

9 Q Do you know how many thiol groups are
10 typically created when a monoclonal antibody is
11 treated with DTT, as shown here?

12 MS. MATTES: Objection. Outside the
13 scope of his declaration.

14 A It depends on how much DTT is added.
15 Typically in the range of two up to eight thiol
16 residues.

17 Q So two up to eight thiols are
18 created?

19 A Yes. And that's general. You can
20 certainly fall outside of that range if you --
21 you know, depending on conditions and such.

22 Q Okay. Is it the case that each

1 disulfide bridge, when it is cleaved, gives two
2 thiol groups? Is that how it works?

3 MS. MATTES: Objection. Outside the
4 scope of his declaration.

5 A That is the normal reaction.

6 Q So to get eight thiol groups after
7 treatment with DTT, those would come from four
8 disulfide bridges or bonds?

9 MS. MATTES: Same objection. And
10 incomplete hypothetical.

11 A Again, under usual circumstances,
12 yes. And I'm not trying to limit it to saying
13 that that is the only way to get, you know, four
14 thiol residues, but, yes, that is the typical
15 way -- a common way of doing it.

16 Q Okay. Thank you. There is one
17 curiosity I have, if you will, that is related
18 to this line of questioning. If you look back
19 at the patent at page 21 that we were just on,
20 it seems to show in the next line that the
21 linker that is shown there has been attached to
22 a monoclonal antibody presumably that's an

1 attachment at the thiol group, correct, or at a
2 thiol group?

3 MS. MATTES: Objection. Outside the
4 scope of his expert declaration.

5 A Yes.

6 Q And I see beside the brackets -- so
7 there is a compound there labeled compound 196
8 that's in brackets, and just to the right of the
9 brackets there, I see an "n = 1 to about 20."
10 Do you see that?

11 MS. MATTES: Same objection.

12 A Yes, I do.

13 Q Do you have an understanding of what
14 that is indicating?

15 MS. MATTES: Same objection.

16 A Yes.

17 Q Could you walk me through that, just
18 briefly?

19 A This seems to be referring to the
20 number of linker units that are added to the
21 antibody. And in this scheme they are saying
22 that between 1 and 20 -- there is an

1 "approximate" sign, so within that range could
2 potentially be added using the shown chemistry.

3 Q So I'm curious, do you have any sense
4 of how one could add up to 20 linkers to thiol
5 groups on a monoclonal antibody?

6 MS. MATTES: Objection. Outside the
7 scope and incomplete hypothetical.

8 A Yes.

9 Q Is it -- if you get up to 20, are
10 those all coming from reduced disulfide bridges,
11 or would you surmise that they are getting thiol
12 groups there some other way?

13 MS. MATTES: Same objections.

14 A The chemistry shown seems to imply
15 that it is reduction of disulfide bridges, but
16 it is not specifically stated. There are other
17 ways to introduce thiol residues onto
18 antibodies.

19 Q Okay. Okay.

20 Looking again at that compound 196 on
21 page 21 of the patent, on the far left-hand side
22 of that compound, is that -- is the terminus of

1 that compound what's referred to as a
2 hydroxylamine group?

3 MS. MATTES: Objection to the extent
4 it is outside the scope of his expert
5 declaration.

6 A Yes, it is.

7 Q And then do you see to the right of
8 that there is an arrow, and it seems to be
9 indicating a reaction is being carried out in
10 EDC/HCl (0.1eq)?

11 MS. MATTES: Same objection.

12 A Yes, I see that.

13 Q And do you have an understanding of
14 what that is indicating?

15 MS. MATTES: Same objection.

16 A I see the reaction that is taking
17 place, and I'm familiar with the reaction that's
18 taking place, at least reasonably familiar with
19 it. However, the reagents shown are not the
20 reagents that I am familiar with promoting this
21 sort of reaction.

22 So I can't say exactly what they are

1 doing in this reaction. I see the reaction. I
2 know that is a common reaction that people do
3 but this seems to be unusual conditions.

4 Q Okay. Well, first of all, let's -- I
5 got ahead of myself a little bit there. Let's
6 talk about what the reaction is, first of all.

7 Just at a summary level, can you tell
8 me what reaction is being shown there?

9 MS. MATTES: Objection to the extent
10 it is outside the scope of his expert
11 declaration.

12 A I don't recall the name reaction that
13 it is. It is a dehydration of some sort.

14 Q Okay. Is it that the hydroxylamine
15 group is reacting with a functionalized drug to
16 form a linkage to the drug?

17 MS. MATTES: Objection to the extent
18 that it is outside the scope of his expert
19 report.

20 A I can't say if it is a functionalized
21 drug, but there is a molecule that has a
22 carbonyl, and it appears to be reacting with the

1 hydroxylamine.

2 Q Fair enough. Understood. So the
3 hydroxylamine is reacting with the carbonyl on
4 the drug to form an attachment, correct?

5 MS. MATTES: Same objection.

6 A That appears to be what is going on,
7 but without additional information about the
8 drug or the R double prime group, I can't say
9 very much about that reaction.

10 Q Okay. Just out of curiosity, I
11 believe, under the arrow there, it does list a
12 few groups for R double prime. Does that help
13 clarify anything in your mind about this
14 reaction?

15 MS. MATTES: Same objection. Outside
16 the scope of his declaration.

17 A That helps a little bit, but, again,
18 I'm not sure what's on the other side, what atom
19 is connected to the carbonyl from the drug
20 itself. And that matters for the chemistry that
21 is shown and whether -- you know, what kind of
22 conditions you would use for that reaction and

1 so on.

2 Q Okay. In this reaction scheme at
3 least they are showing that it is being carried
4 out in the presence of HCl; is that fair?

5 MS. MATTES: Same objection. Outside
6 the scope of his expert declaration.

7 A They are showing that, yes.

8 Q And is that 0.1eq, is that .1 molar
9 equivalence? Do you have an understanding of
10 what that means?

11 MS. MATTES: Same objection.

12 A That is typically what I would use
13 the abbreviation "eq" for, yes.

14 Q Do you know what the purpose of
15 having an acid present for that reaction might
16 be?

17 MS. MATTES: Objection. Outside the
18 scope of his expert declaration.

19 A In the case -- it is a little hard
20 for me to answer because I do have a sense of
21 what that would be used for in a typical -- I
22 believe this is called an oxime formation

1 reaction.

2 I do have a sense of what it is used
3 for in an organic chemistry lab. But how that
4 translates here to something with a monoclonal
5 antibody, I'm not sure. That doesn't -- I'm
6 going to be honest that the conditions that are
7 described there really don't make sense in this
8 context. I believe there may have been some
9 sort of a copy-and-paste error or something
10 there. I've never seen anything like that for a
11 reaction with an antibody.

12 Q Okay. Just to be clear, if I'm
13 reading the page right, the reaction there is
14 not -- the monoclonal antibody is not intended
15 to react in that step, is it?

16 MS. MATTES: Objection. Outside the
17 scope of his expert declaration.

18 A But the monoclonal antibody is
19 present.

20 Q Yes, understood. And so is -- well,
21 okay, so let me just ask my question again, and
22 then I -- I think I know what you're getting at.

1 But in that step, the one that is shown from --
2 going from compound 196 to compound 195, the
3 monoclonal antibody there is not shown as
4 further reacting, correct?

5 MS. MATTES: Objection to the extent
6 that -- sorry, excuse me. Objection. Outside
7 the scope of his expert declaration and calls
8 for speculation.

9 A It is not showing that the antibody
10 is reacting.

11 Q Is your concern or your hesitation
12 about these reaction conditions that you have a
13 concern about HCl being present in the presence
14 of a monoclonal antibody? Is that what your
15 hesitation is about?

16 MS. MATTES: Objection. Outside the
17 scope of his expert declaration.

18 A There are two reasons. One is that
19 reactions with antibodies always occur in a
20 buffer. And it doesn't really make sense --
21 what does it mean to add HCl to a buffer? It is
22 going to be immediately destroyed. So that --

1 that doesn't make sense. And the other piece
2 that doesn't make sense is the fact that the
3 antibody itself has both acidic and basic
4 residues, which, again, are going to immediately
5 quench that HCl.

6 Therefore, under normal organic
7 chemistry lab techniques, in the absence of an
8 antibody, I understand what HCl does. In this
9 context, the addition of HCl doesn't make any
10 sense to me.

11 Q Okay. Maybe it would be helpful if I
12 understood -- let's just focus for a moment on
13 the part of your response there where you just
14 said outside of the context of a monoclonal
15 antibody. Let's just focus on the -- for just a
16 moment, let's focus on the reaction between the
17 hydroxylamine and the carbonyl component -- the
18 carbonyl-containing drug. What does HCl do in
19 that context?

20 MS. MATTES: Objection. Outside the
21 scope of his expert declaration. Incomplete
22 hypothetical. Calls for speculation.

1 A HCl protonates the carbonyl, making
2 it more electrophilic and allowing the
3 hydroxylamine to attack.

4 Q Would that sometimes be referred to
5 as an acid-catalyzed reaction?

6 MS. MATTES: Objection. Outside the
7 scope of his expert declaration. Same
8 objections as previously.

9 A That can be referred to as an
10 acid-catalyzed reaction, yes.

11 Q So I'm going to ask a slightly
12 different question now.

13 Can a hydroxylamine functional group
14 be reacted with a carbonyl functionalized
15 monoclonal antibody in an acid-catalyzed
16 reaction similar to the conditions that are
17 shown here?

18 MS. MATTES: Objection. Outside the
19 scope of this expert declaration. Incomplete
20 hypothetical.

21 A I've never seen that. It doesn't
22 mean it can't happen, but that's not the way

1 that this reaction is done with a monoclonal
2 antibody.

3 Q Okay. I'm going to pop an exhibit
4 into the Chat, and this one is one you won't
5 have a paper copy of, unfortunately. I
6 apologize for that.

7 THE COURT REPORTER: When you put
8 them in the Chat, are you marking them?

9 DR. HOUSTON: Oh, thank you for
10 asking. These particular ones have been, let's
11 say, pre-labeled. So they already have an
12 exhibit number on them, and I'll explain that.

13 So you don't need to add your own
14 markings or anything of that nature. Does that
15 make sense?

16 THE COURT REPORTER: Yes.

17 (Exhibit 1089 previously marked for
18 identification and attached to the transcript.)

19 Q So you should see in the Chat now a
20 document that is labeled "Exhibit 1089 - Axup."

21 A Yes.

22 Q Please go ahead and open that, and,

1 Dr. Tumey, I appreciate this is a document you
2 haven't seen before. My questions about it will
3 be fairly basic, but please -- we'll pause and
4 let you take a moment to review it and you can
5 just let me know when I can ask you a few
6 questions about it.

7 A Okay.

8 DR. HOUSTON: And, Court Reporter,
9 let me know if you have any particular questions
10 or concerns about the markings, but you'll see
11 at the bottom it has an exhibit label 1089.

12 THE COURT REPORTER: I see it.

13 (Witness reviewing document.)

14 A I've looked at the figures. I think
15 I see where you're going with this. I'm happy
16 to try to answer any questions about it,
17 although I will remind you I have, of course,
18 not read the entire article here.

19 Q Yeah, I understand. And so --

20 MS. MATTES: Mike?

21 DR. HOUSTON: Yes.

22 MS. MATTES: Sorry, not to interrupt

1 your question. Just one thing. I want to go
2 back and check what the board allowed in terms
3 of additional evidence to be submitted after the
4 fact. So we're just going to put an objection
5 on the record that we object to any additional
6 exhibits being submitted or additional evidence
7 besides the deposition of Dr. Tumey.

8 DR. HOUSTON: Okay. Yes, your
9 objection is noted. Thank you, Catherine.

10 Q Okay. Dr. Tumey, let's see, I'd like
11 to ask you to turn to page 2 of this PDF of
12 Exhibit 1089. And just take a look at the
13 reaction that is depicted there. I believe that
14 is part of Figure 1, and at the top part of
15 Figure 1, it has a big capital letter A beside
16 it.

17 Do you see that?

18 A Yes.

19 Q Would you agree that this -- that the
20 reaction shown here is depicting -- first of
21 all, there is a molecule in the far left-hand
22 side, and that molecule on its far right-hand

1 side has a hydroxylamine terminal group.

2 Would you agree with that?

3 MS. MATTES: Objection. Outside the
4 scope of his expert declaration. Feel free to
5 read the entire reference to make sure you
6 understand what you are looking at and not just
7 rely on the figure.

8 A Yes, that is a hydroxylamine in
9 that -- in Figure 1.

10 Q And that reaction scheme in
11 Figure 1 -- is it okay if I just call that
12 Figure 1A? I think that's what they mean to do
13 there.

14 A Yes.

15 Q Across the top? Okay.

16 Would you agree that the reaction
17 shown there in Figure 1A is depicting a molecule
18 with a hydroxylamine functional group reacting
19 with either an antibody fragment or a full
20 antibody through what it calls an oxime
21 ligation?

22 MS. MATTES: Objection. Outside the

1 scope of his expert declaration. Feel free to
2 review whatever you need. And the document
3 speaks for itself.

4 A Yes, they are depicting an oxime
5 formation reaction, and it is a common reaction.
6 This is -- yeah, I have seen many reactions like
7 this.

8 Q And it is also depicting that the
9 reaction conditions for that reaction are a pH
10 of 4.5, correct?

11 MS. MATTES: Same objection.

12 A That is what it is depicting, yes.

13 Q Other than perhaps an acid, are you
14 aware of other catalysts that can be used to
15 catalyze the reaction of a hydroxylamine
16 functional group?

17 MS. MATTES: Objection. Outside the
18 scope of the expert declaration and vague.
19 Calls for speculation.

20 Q Dr. Tumey, let me clarify one thing
21 there. I realize that is a bit of an open-ended
22 question. I meant to ask in particular about a

1 reaction of a hydroxylamine functional group in
2 an -- whether we want to call it an oxime
3 ligation -- or oxime formation is, I think, a
4 term you used earlier, so I did want to make it
5 clear I'm asking about that reaction. So with
6 that understanding, let me try again.

7 Are you aware of other catalysts that
8 can be used to catalyze the reaction of a
9 hydroxylamine functional group to form an
10 oxime -- or in an oxime ligation, to use the
11 terminology that's seen here in this exhibit?

12 MS. MATTES: Objection. Outside the
13 scope of the expert declaration. Vague. Calls
14 for speculation.

15 A I guess I'm not comfortable with your
16 question because you're implying that there is a
17 catalyst present here, and I do not see one.

18 Q Okay. So -- fair enough.

19 Are you aware of catalysts that can
20 be used to catalyze the reaction of a
21 hydroxylamine functional group for -- to form an
22 oxime linkage?

1 MS. MATTES: Objection. Outside the
2 scope of his expert declaration. Vague. And
3 calls for speculation.

4 A I am broadly familiar that there are
5 other reagents that are used to promote this
6 sort of reaction. I don't think I could recall
7 one off the top of my head, however.

8 Q Okay.

9 I'm going to put another document
10 into the Chat. Well, I thought I was. One
11 second.

12 Sorry, it's just taking a moment to
13 load, I guess.

14 MS. MATTES: Mike, I'm just going to
15 put in a standing objection to any new documents
16 you're marking as exhibits --

17 DR. HOUSTON: Understood.

18 MS. MATTES: -- that are not already
19 part of the record.

20 DR. HOUSTON: Understood.

21 My apologies, everyone. It is just
22 giving me the "wait."

1 I got a pop-up that says, "Zoom is
2 not responding." So if I lose everyone, I
3 apologize. Obviously, I will sign back on. But
4 let me see if I can get it to clear up here.

5 Okay.

6 MS. MATTES: I think you froze, Mike.

7 (Technical issues.)

8 MS. MATTES: Adrienne, maybe we
9 should go off the record.

10 THE COURT REPORTER: Yes, we're off
11 the record.

12 (A recess was taken.)

13 (Exhibit 1090 previously marked for
14 identification and attached to the transcript.)

15 BY DR. HOUSTON:

16 Q Dr. Tumey, you should see populated
17 in your Chat now an exhibit labeled 1090.

18 Do you see that?

19 A Yes.

20 Q So same thing, please take a moment
21 to review that. Again, my questions will be
22 fairly simple, but, by all means, take some time

1 to review it, and you can always take more time
2 to review it later as well, as needed.

3 (Witness reviewing document.)

4 A Okay. Well, I'm not sure what I can
5 do here in five minutes, but I'm happy to
6 attempt to address any specific questions. But,
7 you know, this is a 95-page document here so ...

8 Q I understand, yeah, it is a very
9 lengthy document with a lot of detail.

10 So, again, I'll try to keep my
11 questions very simple. But, in addition, if you
12 would like more time to review this after I ask
13 a question or two, please just let me know.

14 First, I would ask you to turn to --
15 it's PDF page 48 and, in particular,
16 paragraph 132. Just let me know when you're
17 there.

18 A Okay, yes.

19 Q Paragraph 132 starts off by stating,
20 "Table 1 provides drug-linkers compounds that
21 can be employed with the anti PSMA antibody or
22 antibody drug conjugates of the present

1 invention."

2 Do you see that sentence?

3 A Yes, I do.

4 Q And then if you just turn to the very
5 next page, that gives a new paragraph number of
6 133, there is shown the Table 1. Do you see
7 that?

8 A Yes.

9 Q And that table spans a few pages and,
10 I believe, lists a total of 23 compounds. And I
11 just want to clarify -- or would ask you to
12 clarify or confirm that each one of those
13 compounds shown in Table 1 has a hydroxylamine
14 functional group in them.

15 MS. MATTES: Objection. Outside of
16 the scope of his expert declaration. The
17 document speaks for itself.

18 (Witness reviewing document.)

19 A Yes, I see a hydroxylamine in each
20 one of them, although compound 23, it's cut off,
21 but I assume it also is implying the presence of
22 hydroxylamine.

1 Q All right. You can see the N and
2 part of an H, but you can't quite see the very
3 end of it, yes, I understand. Thank you for
4 that clarification. Okay.

5 With that then, I would ask you to
6 navigate to PDF page 72, if you could, and I'm
7 going to ask you about paragraph 163. So please
8 just let me know when you get there and then
9 feel free to take a few minutes to review
10 paragraph 163, which isn't too long.

11 (Witness reviewing document.)

12 A Okay, yes.

13 Q In that paragraph 163, the third
14 sentence recites that the "PSMA antibody is
15 conjugated with the drug-payload linker by
16 incubating at 28 degrees C in the presence of
17 135 millimolar acetic hydrazide, acting as a
18 catalyst."

19 Do you see that?

20 MS. MATTES: Objection. Outside the
21 scope of the declaration. The document speaks
22 for itself.

1 A I see that, yes.

2 Q Is that reporting the use of acetic
3 hydrazide as a catalyst for that reaction?

4 MS. MATTES: Same objections.

5 A That is what they state, yes.

6 DR. HOUSTON: Okay, Dr. Tumey, I want
7 to thank you for your time today. I don't
8 believe I have any more questions.

9 I will pass the witness.

10 MS. MATTES: Thank you, Mike. If you
11 don't mind, we can take a break and go off the
12 record.

13 DR. HOUSTON: Sure. Shall we aim for
14 15 minutes and just come back and check in?

15 MS. MATTES: Yes, I think that makes
16 sense. Thank you very much.

17 DR. HOUSTON: Okay.

18 DR. LOU: And then we will go to a
19 next-door room and will come back in 15 minutes.

20 MS. MATTES: Thank you.

21 (A recess was taken.)

22 MS. MATTES: So the patent owner does

1 not have any further questions for Dr. Tumey.
2 Thank you very much for your time for today and
3 over the course of the case.

4 DR. HOUSTON: Likewise. Thank you,
5 Dr. Tumey.

6 THE WITNESS: Okay. You're welcome.

7 (Time noted: 11:09 a.m.)
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ACKNOWLEDGMENT OF DEPONENT

I, LAWRENCE NATHAN TUMEY, Ph.D., do
hereby acknowledge that I have read and examined
the foregoing testimony, and the same is a true,
correct and complete transcription of the
testimony given by me and any corrections appear
on the attached Errata sheet signed by me.

(Date)

(Signature)

CERTIFICATE OF REPORTER - NOTARY PUBLIC

I, ADRIENNE MIGNANO, Certified Reporter
and Notary Public do hereby certify:

That LAWRENCE NATHAN TUMEY, Ph.D., the
witness whose deposition is hereinbefore set forth,
was duly sworn by me before the commencement of such
deposition and that such deposition was taken before
me and is a true record of the testimony given by
such witness.

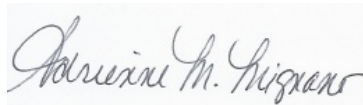
I further certify that the adverse party
was represented by counsel at the deposition.

I further certify that the deposition of
LAWRENCE NATHAN TUMEY, Ph.D., occurred virtually,
on Friday May 9th, 2025, commencing at 10:00 a.m.
to 11:09 a.m.

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

IN WITNESS WHEREOF, I have hereunto set
my hand and affixed my notarial seal this 13th day
of May, 2025.

My Commission Expires: June 2026.



ADRIENNE M. MIGNANO, RPR

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Conducted on May 9, 2025

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