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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD
WATSON LABORATORIES, INC.,)
Petitioner,)
vs.) IPR NO. 2017-01621
UNITED THERAPEUTICS CORP.,) IPR NO. 2017-01622
Patent Owner.)

The videotaped deposition of MAUREEN DONOVAN, Ph.D., called as a witness for examination, taken pursuant to the Federal Rules of Civil Procedure of the United States District Courts pertaining to the taking of depositions, taken before ANDREA L. KIM, a Certified Shorthand Reporter of said state, CSR No. 84-3722, at Suite 4800, 35 West Wacker Drive, Chicago, Illinois, on the 4th day of April, A.D. 2018, at 9:37 a.m.

Job No: 54284

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ALSO PRESENT :

MR. JEREMY MANGAN, Videographer.

REPORTED BY: ANDREA L. KIM,
Illinois CSR No. 84-3722.

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I N D E X

WITNESS :

PAGE :

MAUREEN DONOVAN, Ph.D.

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EXAM by MR. MATHAS 158

I N D E X

EXHIBIT NUMBER	MARKED
Exh 1001	13
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1 MAUREEN DONOVAN, Ph.D.

2 THE VIDEOGRAPHER: We are now on
3 the record. This marks the beginning of media
4 number 1 in the deposition of Maureen Donovan
5 in the matter of Watson Laboratories, Inc.,
6 versus United Therapeutics Corporation in the
7 U.S. District Court, District of New Jersey.

8 This deposition is being held at 35
9 West Wacker Drive, Chicago, Illinois on April
10 4th, 2018, and the time is now 9:41 a.m.

11 Will attorneys please identify
12 themselves.

13 MR. MATHAS: Good morning. Kurt
14 Mathas from Winston & Strawn on behalf of the
15 petitioner Watson Pharmaceuticals, Inc., and
16 the witness Dr. Donovan, and for the record, I
17 would note that the caption read on was the
18 district court caption. We are actually here
19 today in proceedings in two IPRs, IPR No.
20 2017-1621 and 1622 titled Watson Laboratories,
21 Inc., v. United Therapeutics Corp.

22 MS. ASCARRUNZ: Good morning. My
23 name is Veronica Ascarrunz from the law firm
24 Wilson Sonsini Goodrich & Rosati in Washington,
25 D.C. here representing the patent owner. With

1 MAUREEN DONOVAN, Ph.D.
2 me are co-counsel Stephen Maebius and Natash
3 Iyer of Foley & Lardner in Washington, D.C.
4 also representing the patent owner.

5 THE VIDEOGRAPHER: Will the court
6 reporter please swear in the witness.

7 (WHEREUPON, the witness was duly
8 sworn.)

9 MAUREEN DONOVAN, Ph.D.,
10 called as a witness herein, having been first
11 duly sworn, was examined and testified as
12 follows:

13 EXAMINATION

14 BY MS. ASCARRUNZ:

15 Q. Good morning, Dr. Donovan.

16 A. Good morning.

17 Q. Could I get you to state your
18 full name for the record, please.

19 A. Maureen Donovan.

20 Q. And you have been deposed
21 before, correct?

22 A. Yes, I have.

23 Q. Approximately how many times?

24 A. About 11 times.

25 Q. Have you been deposed in an

1 MAUREEN DONOVAN, Ph.D.

2 IPR proceeding before?

3 A. Yes, I have.

4 Q. And, therefore, I -- I know
5 you understand the ground rules. I'm going to
6 go over just a few of the most important ones
7 to make sure we are on the same page.

8 You understand that you are
9 here today to testify truthfully because you
10 are under oath just as if you were in a
11 courtroom or in front of the Board?

12 A. Yes.

13 Q. And because we have a court
14 reporter taking down our questions and answers,
15 I would ask that you wait until I finish asking
16 my question before you begin to answer.

17 Is that fair?

18 A. Yes.

19 Q. And if you don't understand
20 one of my questions, will you please let me
21 know?

22 A. Okay.

23 Q. Otherwise, if you answer my
24 question, I will assume that you understood it.

25 Is that fair?

1 MAUREEN DONOVAN, Ph.D.

2 A. Yes.

3 Q. We will probably take a few
4 breaks about on the hour or a little bit longer
5 than an hour. If you need to take a break any
6 time before I call for one, please just let me
7 know.

8 A. Okay.

9 Q. The only thing I will ask is
10 if there's a question pending, let's answer the
11 question first, and then we can take a break.

12 A. Sure.

13 Q. Are you aware of anything that
14 prevent you from providing complete and
15 truthful answers today?

16 A. No.

17 Q. I will start by handing you
18 the first exhibit which is marked Exhibit 1002
19 in case IPR 2017-01622.

20 (WHEREUPON, a certain document
21 was marked Deposition Exhibit
22 1002, for identification,
23 as of 4/4/18.)

24 BY MS. ASCARRUNZ:

25 Q. Dr. Donovan, is this a copy of

1 MAUREEN DONOVAN, Ph.D.

2 your expert declaration provided in case IPR
3 2017-01622 in connection with Patent No.
4 9,339,507?

5 A. It appears to be, yes.

6 Q. And does this declaration bear
7 your signature on page 105 of 105?

8 A. Yes, it does.

9 (WHEREUPON, a certain document
10 was marked Deposition Exhibit
11 1002, for identification,
12 as of 4/4/18.)

13 BY MS. ASCARRUNZ:

14 Q. And for the record, the court
15 reporter has just handed you Exhibit 1002 in
16 IPR proceeding 2017-01621.

17 Dr. Donovan, is this exhibit
18 your expert declaration provided in case IPR
19 2017-01621 in connection with Patent No.
20 9,358,240?

21 A. It appears to be, yes.

22 Q. And does this bear your
23 signature on page 91 of 91?

24 A. Yes, it does.

25 Q. So I notice that the two

1 MAUREEN DONOVAN, Ph.D.

2 declarations have obviously different page
3 numbers. I understand that there are also a
4 number of other differences between the two
5 declarations?

6 A. There's several differences,
7 yes.

8 Q. Okay. One of the major
9 differences is that you rely on the Chaudry
10 reference in connection with the '507 patent,
11 but not the '240 patent, correct?

12 A. I believe that's correct, yes.
13 I could double check, but that's correct.

14 Q. Okay. Since the '507 patent
15 declaration contains additional pages and the
16 discussion of Chaudry, is it fair to
17 characterize that declaration as containing
18 more information than is provided in the '240
19 declaration?

20 A. Well, the declaration for the
21 '507 addresses issues that aren't pertinent to
22 the '240. So it contains additional
23 information.

24 Q. Okay. Apart from those
25 differences and additional sort of differences

1 MAUREEN DONOVAN, Ph.D.
2 in wording, et cetera, that are found between
3 the two, is your opinion between the '240
4 declaration and the '507 declaration
5 consistent?

6 MR. MATHAS: Object to the form.

7 BY THE WITNESS:

8 A. I guess there's a number of
9 items in each of these reports that I express
10 an opinion about. So I think it probably would
11 be most helpful to step through each one of
12 those individual items and describe whether my
13 opinion is consistent or not.

14 BY MS. ASCARRUNZ:

15 Q. Okay. And we will. Where I
16 am trying to go here is I don't want to ask you
17 seven hours of questions on one and then seven
18 hours of questions on the other. I would like
19 to be able to use your testimony today to
20 encompass both declarations, and where the
21 differences are important, we can articulate
22 those. Either I will do so in my question or
23 if you feel the need to do so, you would do so
24 as well.

25 So that's the context of sort

1 MAUREEN DONOVAN, Ph.D.

2 of where I am going with this. I am not trying
3 to do like sort of a gotcha of, you know,
4 equating the two together.

5 So is it fair to characterize
6 the two declarations as being related?

7 A. Yes.

8 Q. Okay. And as having some
9 degree of overlap?

10 A. Yes, they is speak to many of
11 the same issues.

12 Q. Perfect. Okay.

13 MS. ASCARRUNZ: So Kurt with that
14 context and background, can we agree that this
15 transcript will be used in both proceedings?

16 MR. MATHAS: We can agree that the
17 transcript will be used in both proceedings,
18 yes.

19 BY MS. ASCARRUNZ:

20 Q. And as I said, Dr. Donovan,
21 where I -- where my questions are specific to
22 one patent or the other, I will try to make
23 that clear, and I would ask that you do the
24 same. If your opinion would different
25 depending on which patent we are talking about,

1 MAUREEN DONOVAN, Ph.D.

2 please let me know.

3 A. Okay.

4 Q. So that you have them in front
5 of you should you need them during the
6 deposition, I will go ahead and give you the
7 patents now.

8 (WHEREUPON, certain documents
9 was marked Deposition
10 Exhibit 1001, 1001, for
11 identification, as of 4/4/18.)

12 BY MS. ASCARRUNZ:

13 Q. So, Dr. Donovan, the court
14 reporter has now handed you two exhibits. For
15 the record, one is marked Exhibit 1001 in IPR
16 proceeding 01622, and the other is also Exhibit
17 1001 in IPR proceeding 01621.

18 Do you have those in front of
19 you?

20 A. I have things that are marked
21 one and two.

22 Q. Okay. So --

23 A. If that's adequate, then, yes.

24 Q. Okay. The two items at the
25 top of your table there, the two patents, both

1 MAUREEN DONOVAN, Ph.D.

2 of which are Exhibits 1001. Are those the two
3 patents that are at issue in your declaration?

4 A. Oh, I see what you mean by
5 exhibit number.

6 Actually, both of them are at
7 the -- the bottom numbers are listed as 1001.

8 Q. Correct.

9 A. Okay.

10 Q. And you will notice -- thank
11 you for the clarification there. It's
12 important to note at the bottom in the dark
13 bold is the exhibit number as well as the
14 proceeding and the page number.

15 So when I am referring to page
16 numbers, I'll typically refer to those.

17 A. Okay.

18 Q. So you noted that they were
19 both marked Exhibit 1001, correct?

20 A. That's correct.

21 Q. And you will notice that one
22 is in connection with one of the proceedings,
23 and one is in connection with the second
24 proceeding. That's the distinction.

25 A. Yes. Okay.

1 MAUREEN DONOVAN, Ph.D.

2 Q. You are familiar with these
3 patents, correct?

4 A. Yes, I am.

5 Q. Treprostinil is a component in
6 all of the claims of those two patents,
7 correct?

8 A. Well, in the '507 treprostinil
9 is mentioned in claim 1 and in claim 2, and all
10 the rest of the claims are either dependent on
11 one, two, or six, and six is dependent on two.
12 So it's mentioned -- treprostinil is mentioned
13 or dependent in all of the claims of the '507.
14 And similarly for the '240, treprostinil is
15 mentioned in claims 1 and 2 -- or actually
16 claim 1. None of the other claims are
17 dependent on claim 1, and for claim 2 and claim
18 6, treprostinil is also mentioned in those.

19 Q. Okay. You are using the word
20 mentioned. Is treprostinil a limitation of all
21 of the claims?

22 A. I think you would have to
23 explain to me what you mean by a limitation in
24 a claim.

25 Q. Do you not have an independent

1 MAUREEN DONOVAN, Ph.D.

2 understanding of what a limitation in a patent
3 claim is?

4 A. I don't keep track of legal
5 requirements for terminologies. I have looked
6 at others to instruct me how to use those terms
7 when necessary.

8 Q. Okay. Fair enough. We can
9 move on.

10 You recall that I deposed you
11 in this building in June of last year in
12 connection with the district court action
13 between the same parties involved in this
14 proceeding, correct?

15 A. Yes.

16 Q. And your testimony in that
17 other case included, among others, discussion
18 about the same two patents that you have in
19 front of you as Exhibits 1001, correct?

20 A. Correct.

21 Q. And at the time of that
22 deposition, you were under oath and endeavored
23 to answer my questions truthfully, correct?

24 A. Yes.

25 Q. Have you reviewed that

1 MAUREEN DONOVAN, Ph.D.

2 deposition testimony in connection with your
3 work on this IPR?

4 A. I have.

5 Q. When was the last time you
6 reviewed your deposition testimony?

7 A. Yesterday.

8 Q. And we previously talked about
9 some of your expertise at that deposition. So
10 I wouldn't rehash all of it today, but there
11 are some issues that are probably important to
12 discuss for these proceedings.

13 You are an expert in
14 pharmaceuticals, correct?

15 A. Yes.

16 Q. But you don't claim to be an
17 expert in the law, correct?

18 A. No, I do not.

19 Q. And you are not a medical
20 doctor, correct?

21 A. No, I am not.

22 Q. And you do not claim to be an
23 expert in the treatment of pulmonary
24 hypertension, correct?

25 A. No.

1 MAUREEN DONOVAN, Ph.D.

2 Q. And you have not researched
3 pulmonary hypertension in your professional
4 experience outside of this and the prior case
5 between the parties, correct?

6 A. Not to any significant extent.

7 Q. Have you researched pulmonary
8 hypertension in your professional experience to
9 any extent?

10 A. I was -- both in my
11 professional and my personal experiences, I am
12 familiar with pulmonary hypertension and have
13 looked at treatments and disease state
14 progression information.

15 Q. Okay. You have not been
16 involved in any clinical trials related to
17 pulmonary hypertension, correct?

18 A. That's correct.

19 Q. And before the district court
20 case between the parties, you were not familiar
21 with TYVASO, correct?

22 A. Not to any extent, no.

23 Q. And before your involvement in
24 the district court case between the parties,
25 you were not familiar with treprostinil in any

1 MAUREEN DONOVAN, Ph.D.

2 form from a professional standpoint, correct?

3 A. No.

4 Q. And you have never published
5 on prostacyclins, correct?

6 A. No, I have not.

7 Q. And you don't claim to be an
8 expert in pulmonary hypertension, correct?

9 A. No.

10 Q. And you haven't developed any
11 products that have been approved or submitted
12 for approval to the FDA for the treatment of a
13 disease, correct?

14 A. That's correct.

15 Q. And you have not developed any
16 drug device combinations that have been
17 approved or submitted for approval to the FDA,
18 correct?

19 A. That's correct.

20 Q. And you are not an expert in
21 the design of nebulizers, correct?

22 A. That's correct. I have an
23 understanding of nebulizer design, but I
24 wouldn't lead that to I am not in an expert in
25 the design of.

1 MAUREEN DONOVAN, Ph.D.

2 Q. And you have testified a
3 number of times in patent cases, correct?

4 A. Yes, I have.

5 Q. And in all the cases in which
6 you have testified at trial or in deposition,
7 they were all on behalf of a generic company,
8 correct?

9 A. I am trying to recall, but I
10 actually think my very first deposition was on
11 behalf of the brand owner.

12 Q. Was that in Canada?

13 A. Yes, it was.

14 Q. In all cases in which you have
15 testified at trial or deposition in the United
16 States, they were all on behalf of a generic
17 company, correct?

18 A. Yes, they were.

19 Q. In the course of your
20 professional career, you have multiple
21 publications, correct?

22 A. Yes, I do.

23 Q. And are any of those review
24 articles?

25 A. Yes.

1 MAUREEN DONOVAN, Ph.D.

2 Q. Are any of those abstracts?

3 A. Certainly, yeah.

4 Q. When you publish papers, you
5 frequently have to perform literature research
6 and cite to the publication of others, correct?

7 A. Yes, that's true.

8 Q. When you are performing the
9 research for such endeavors, what steps do you
10 take to find relevant sources?

11 A. Are you speaking -- are we
12 speaking currently? Are we speaking ever since
13 I started publishing work?

14 Q. Why don't we think back to
15 2004.

16 A. Okay. So in 2004, there were
17 sort of probably multiple avenues in the area
18 that I was likely to be publishing in I already
19 had familiarity with. So I probably had some
20 key references. Maybe I had an extensive
21 collection and was just trying to make sure
22 that it was completely up to date, but
23 regardless I certainly start with key
24 references -- well, let me back up.

25 Starting with an online

1 MAUREEN DONOVAN, Ph.D.

2 literature search is certainly a process that
3 either immediately or initially or as a follow
4 up to a couple of key references would take
5 place.

6 I would look at databases
7 that -- that are designed to have or give easy
8 access to literature, and most of them -- many
9 of them are linked in my library, and I have --
10 then I can figure out whether my library owns
11 that material that I am interested in or
12 whether I need to request it as loan material
13 or whatever.

14 So I will do several
15 literature searches. In 2004 there were
16 probably -- and even currently -- probably
17 about three. Maybe in 2004 there were even
18 four databases that I would typically search if
19 I were looking for -- it depends on what I was
20 looking for, but if I was looking for a pretty
21 extensive cross-section of information, and
22 then often times if I have a key piece of
23 literature I have identified or review article
24 or something else or there is something I want
25 to follow up on, I will look at the references

1 MAUREEN DONOVAN, Ph.D.

2 that are in that particular piece of
3 literature.

4 I will follow up on those. I
5 will follow up on the particular key piece by
6 looking at who has cited that literature and
7 sort of expand the search in that manner when I
8 find actual papers or review articles or
9 something that I think are particularly
10 valuable that I want to know who else followed
11 up on those.

12 Q. Okay. And you mentioned that
13 there were four databases in 2004 that you
14 might consult.

15 What databases are those?

16 A. I would certainly consult with
17 PubMed. I would consult with a database that
18 was called International Pharmaceutical
19 Abstracts. I would consult with what probably
20 at the time even was the SciFinder database for
21 the American Chemical Society, and I would look
22 at the Web of Science database.

23 Q. If you were performing a
24 similar search in 2006, would there be any
25 major changes to what you've just described?

1 MAUREEN DONOVAN, Ph.D.

2 A. No.

3 Q. Is it your opinion that a
4 person of ordinary skill in the art as you have
5 defined that person in this proceeding in 2006
6 would go about performing research in a similar
7 manner?

8 A. Yes.

9 Q. You have indicated that you
10 have published some abstracts, correct?

11 A. Well, abstracts that I have
12 presented have been published.

13 Q. Okay. And what was the
14 purpose of publishing those abstracts?

15 A. Often times the abstracts
16 that -- the abstracts that are published are
17 abstracts of presentations that were made at a
18 national meeting. The organizations that
19 sponsor those meetings often times have
20 associations with particular publications, and
21 as part of publishing agreements and so forth,
22 often times the abstracts appear in that
23 publication post the -- post their
24 presentation.

25 As time has gone on, that --

1 MAUREEN DONOVAN, Ph.D.

2 in particular one of the organizations that I
3 present at most frequently, they have -- they
4 now house the abstract -- the abstracts at the
5 national meetings on their own website.

6 Q. And what would be the purpose
7 of putting the abstracts for the national
8 meetings on the website?

9 A. I -- I am going to suppose
10 this just because I knew about the
11 association's agreements with their previous
12 publishers that it just became a matter of the
13 next negotiation with the publishers of the
14 journals that they were associated with that
15 the association felt that it better served
16 their members to house the abstracts on their
17 website, and that they didn't need to be
18 associated with any particular journal.

19 The association had developed
20 interactions with a number of journals. I
21 think a number of them had different
22 publishers. So I think it became an issue of
23 which journal, which publisher, how do you make
24 this all work. So given somewhat of the
25 interdisciplinary nature of the particular

1 MAUREEN DONOVAN, Ph.D.
2 organization and the meeting and the materials
3 that are presented there, it became I think
4 easier for their members to access that
5 information via the association's website than
6 it did to select a particular publisher and
7 journal to house those.

8 Q. In the discussion of how you
9 might have or a person of ordinary skill in the
10 art might have gone about performing research
11 or I guess just going back to that discussion.
12 If you were searching for works in 2006 about
13 treating pulmonary hypertension, would you pick
14 up every issue of a certain periodical for the
15 last two years and leaf through it because that
16 periodical happened to deal with, for example,
17 medicine?

18 MR. MATHAS: Object to the form.

19 BY THE WITNESS:

20 A. I'm going to -- well, I'm
21 going to answer that as a person who is
22 interested in -- in pharmaceuticals,
23 pharmaceuticals aspects. Leafing through medical
24 journals sometimes is a great way to actually
25 get new ideas for potential new dosage forms or

1 MAUREEN DONOVAN, Ph.D.

2 improvements to current dosage forms. So it's
3 not out of the question that that might happen.

4 I don't do it on a regular
5 basis, and if I am looking for general
6 information in a particular therapeutic area,
7 that probably wouldn't be how I would start,
8 but I am not going to exclude that it wouldn't
9 be something -- especially I would choose
10 probably a focused journal in the area to get
11 an idea of the variety of art.

12 The reason is that, you know,
13 databases are dependent on the words I put into
14 them in their search, and sometimes I want to
15 know what the vocabulary is that I am not aware
16 that I could be using in my search terms. So I
17 might actually go and look at see what people
18 are publishing currently or talking about.

19 BY MS. ASCARRUNZ:

20 Q. Okay. Of the four databases
21 we discussed, is there one in particular that
22 you think is the most popular among persons of
23 ordinary skill in the art as you have defined
24 that person in 2006?

25 A. I guess that's how you go

1 MAUREEN DONOVAN, Ph.D.
2 about searching and what you're comfortable
3 with and what you use is more of an -- not
4 necessarily an individual preference, but it
5 often times -- you know, it can be influenced
6 by what access you have to those materials. So
7 it's really difficult for me to speak for all
8 POSAs on the matter.

9 Q. Okay. Sorry to jump around.
10 I had realized that I forgot to ask some
11 questions before.

12 So going back to abstracts
13 now, you agree with me that abstracts are not
14 peer reviewed, correct?

15 A. No, I don't agree. When I
16 submit an abstract for presentation, it's
17 reviewed before it's accepted for presentation.

18 Q. Okay. Are abstracts indexed
19 and searchable?

20 A. Many times they are, yes.

21 Q. Is that helpful if they are?

22 A. Yes. It's helpful for people
23 who weren't able to actually attend the
24 physical presentation to be able to access, and
25 I cite abstracts in a number of my

1 MAUREEN DONOVAN, Ph.D.

2 publications. So, yes, it's helpful to have
3 them indexed and accessible.

4 Q. When you cite abstracts in
5 your publication, how do you go about finding
6 them?

7 A. Many times they show up in my
8 searches. If -- again, they are -- if they are
9 abstracts that I actually saw the presentation
10 to, you know, I where to go look. I know which
11 journal supplement the particular abstract is
12 in based on what meeting I was at and what year
13 it was during, but otherwise in many cases they
14 actually are -- those citations show up in a
15 literature search.

16 Q. Okay. Have you ever published
17 an abstract where preliminary data was
18 conveyed, but the data did not pan out further
19 into a full research study?

20 A. Can you ask that again?

21 Q. Sure. Let me ask it a
22 different way. That probably wasn't the most
23 articulate question.

24 Have you ever published an
25 abstract where you presented preliminary data

1 MAUREEN DONOVAN, Ph.D.

2 and then were disappointing in how further
3 research evolved from that point?

4 MR. MATHAS: Object to the form.

5 BY THE WITNESS:

6 A. Well, I don't know that I am
7 ever really disappointed in how the research
8 evolves. It is what it is. It may not
9 actually corroborate the hypothesis I had to
10 start with, and as a result, I don't know, I
11 may change my hypothesis and change the
12 approach. I may decide to discontinue. I may
13 identify that I need to do work that requires
14 me to find a collaborator and that doesn't --
15 doesn't either work out, or I am not able to
16 identify a collaborator at the time to move
17 that on at the right time.

18 There's all sorts of things
19 that would cause an area of research to not
20 continue to be pursued, and I have a number of
21 abstracts that the full body of work hasn't
22 resulted in a -- in a publication. Some of the
23 work ends up being resident in my students'
24 thesis instead, and that's the appropriate
25 place for that information.

1 MAUREEN DONOVAN, Ph.D.

2 Q. Okay. Those were exactly the
3 types of things that I was trying to get to,
4 and you articulated them way better that I
5 could have. So thank you.

6 In this case you provided some
7 opinions about a person of ordinary skill in
8 the art, correct?

9 A. Yes.

10 Q. And the person of ordinary
11 skill in the art in this particular case, and
12 by this particular case I mean the two IPR
13 proceedings, were interested in the treatment
14 of pulmonary hypertension, correct?

15 A. I have to find where my --

16 Q. If it helps to direct you to a
17 paragraph I had in mind. In paragraph 112 of
18 the shorter declaration is sort of what I had
19 in mind when I asked that question.

20 So I will restart and ask a
21 different question now that we have that in
22 front of us.

23 A. Okay.

24 Q. You start off that paragraph
25 by indicating that: "Given that a POSA wished

1 MAUREEN DONOVAN, Ph.D.

2 to treatment pulmonary hypertension, it would
3 have been obvious," and then you continue on in
4 the paragraph. So I am just focused on that
5 first part where you indicate that a POSA
6 wished to treat pulmonary hypertension.

7 Do you agree with that?

8 A. Well, I think that is somewhat
9 of a shorthand in the -- in this particular
10 declaration regarding the claims in these
11 patents. The POSA that I have defined is a
12 drug development expert, and so they are
13 wishing to develop a therapy to treat pulmonary
14 hypertension.

15 Q. Okay.

16 A. Somewhat could have added
17 that, but given the context of the other 111
18 paragraphs that precede it, I think it's in
19 keeping with the context of the report.

20 Q. Okay. Fair enough.

21 Now, you pointed out that you
22 have defined a person of ordinary skill in the
23 art, and I believe that is starting around
24 paragraph 72 of this declaration, and one of
25 the statements you make in paragraph 72 is:

1 MAUREEN DONOVAN, Ph.D.

2 "In this case, the earliest priority date to
3 which the asserted claims of the '240 patent a
4 claim is made 15, 2006. Thus, a POSA would
5 have knowledge of all the relevant art as of
6 that time."

7 Are you taking an expert
8 opinion in this case as to the earliest
9 priority date, or is that information that was
10 provided to you by counsel?

11 A. Well, it's a combination. I
12 mean, I could look at the information provided
13 on the face pages of the patents and identify
14 that date, similar dates, and that would be my
15 first estimate.

16 Now, I also don't clearly
17 understand continuations, abandoned patents,
18 and As and Bs and so forth very well. So
19 that's when I ask counsel to either confirm
20 that the date I have identified is actually the
21 priority date or whether there's something that
22 I don't appreciate out of the history that
23 changes that.

24 Q. Okay. And in this case have
25 you done any detailed assessment of when the

1 MAUREEN DONOVAN, Ph.D.

2 inventors conceived of or invented the claims
3 in the patents?

4 A. Can you be more specific about
5 that question?

6 Q. Yes. Have you done an
7 independent assessment to try to put a date to
8 when the inventors conceived the invention?

9 A. Well, I don't know that I
10 necessarily have access to the appropriate
11 information to do that. So I have -- I look at
12 the dates certainly on the patents, and I am
13 left to, you know, essentially believe that
14 that's the date of conception or that --
15 actually that's the date that the complete
16 descriptions about the invention that they want
17 to disclose is identified, but, you know,
18 clearly there are -- there's art that goes into
19 building towards what somebody discloses in a
20 patent.

21 So, you know, which specific
22 idea, which specific part of a claim, which
23 specific thing, you know, when those are
24 conceived is not something that's very -- is
25 necessarily easy for another person to identify

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2 which is why I think it's the inventors'
3 responsibility to define or describe when that
4 was as they're filing the patent application.
5 That's sort of my understanding of they have to
6 document when the invention conception took
7 place.

8 Q. Okay. And I am just trying to
9 get at you weren't tasked with performing a
10 detailed analysis of those particular dates,
11 correct?

12 A. I don't know that I have the
13 capabilities to do that accurately in, you
14 know, United States patent timing, no.

15 Q. Okay. Who are the inventors
16 of the two patents at issue here?

17 A. Well, the inventors are listed
18 on the face pages. So Horst Olschewski, Robert
19 Roscigno, Lewis Rubin, Thomas Schmehl, Werner
20 Seeger, Carl Sterritt, and Robert Voswinckel
21 are listed as the inventors on the '507 patent.
22 And Horst Olschewski, Robert Roscigno, Lewis
23 Rubin, Thomas Schmehl, Werner Seeger, Carl
24 Sterritt, and Robert Voswinckel are also listed
25 as the inventors on the '240 patent.

1 MAUREEN DONOVAN, Ph.D.

2 Q. So the same set of inventors
3 for both patents, correct?

4 A. It appears to be based that on
5 the face pages.

6 Q. Prior to this case and the
7 district court case between the parties, had
8 you heard of any of these individuals?

9 A. Not to my recollection.

10 Q. Do you know the education
11 level of these individuals?

12 A. Not specifically, no.

13 Q. Do you know what the problem
14 the inventors were attempting to solve was?

15 A. I believe it's, you know,
16 somewhat identified in the titles of the
17 patents that they were -- they were using
18 treprostiniil via inhalation, and when you read
19 further into the details of the patent or in
20 the specification, they talk about the disease
21 state that they think that would be appropriate
22 for use.

23 Q. Okay. At paragraph 73 of the
24 '240 declaration, you list some numbered items
25 there.

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2 Do you see that?

3 A. Yes.

4 Q. And you understand these to be
5 factors to be considered in determining the
6 level of skill in the art, correct?

7 A. Yes.

8 Q. Did you consider each of
9 these?

10 A. At various levels, yes.

11 Q. What did you consider with
12 respect to item 2 the types of problems
13 encountered in the art?

14 A. Well, as a pharmaceutical
15 scientist, the art that this speaks to is
16 inhalation administration. I'm quite familiar
17 with the delivery systems and issues sometimes
18 that face those delivery systems in developing
19 materials, dosage forms for inhalation
20 delivery.

21 So I, you know -- I am quite
22 familiar with the problem encountered in the
23 art regarding -- or problems encountered in the
24 art regarding inhalation delivery. So, you
25 know, I didn't have to do a lot of work to find

1 MAUREEN DONOVAN, Ph.D.

2 those particular issues. Those are things that
3 I deal with at -- you know, frequently. I am
4 certainly aware of, follow to some extent
5 utilizing my own research.

6 Q. Okay. And did you consider
7 any similar types of problems specifically with
8 respect to prostacyclins?

9 A. Well, again, I am aware of
10 prostacyclins, some of their similar analog
11 compounds just by virtue of the family of
12 materials has been around and considered for
13 quite a few years. And so in keeping with
14 that, there were specific pieces of information
15 like the structure of treprostinil. Some of
16 its chemical characteristics were certainly
17 things that I was sure that I had more
18 familiarity with than just sort of my casual
19 background, but it becomes a consideration of
20 what the chemistry is of those compounds, what
21 their compatibilities are, what their
22 stabilities are, and so forth.

23 A POSA would certainly include
24 those in their understanding of what the --
25 both the level of skill in the art somebody

1 MAUREEN DONOVAN, Ph.D.

2 interpreting that information and what the art
3 was at the time.

4 Q. Okay. And did you consider
5 any types of problems specifically with respect
6 to the treatment of pulmonary hypertension?

7 A. Again, needing -- you need a
8 knowledge of what the disease state is, what
9 the -- where the target is for treatment, where
10 the target that the particular therapeutic
11 entity that you are using or potentially
12 considering using, where those targets might
13 be, how you go about getting the drug to those
14 targets.

15 Look at -- certainly in the
16 art, you start investigating how others may be
17 delivering similar materials or how in the
18 therapeutic area, how other treatments are
19 currently being utilized to again look at what
20 the level of -- where the art is at the time
21 and where it has been up until that time.

22 Q. Okay. What is the target of
23 treatment for pulmonary hypertension?

24 A. Well, the most obvious target
25 is or region of pathology is in the lungs. I

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2 don't know that we even at this point,
3 certainly not in -- at the priority date of
4 these patents does everybody understand the
5 actual molecular mechanisms behind pulmonary
6 hypertension.

7 So there may be other organs
8 involved. There may be other targets within
9 the body, but the manifestation and the region
10 that certainly could benefit from some
11 therapeutic interventions initially are the
12 lungs. So that would be certainly one of the
13 initial targets that one would assess.

14 Q. So you identified the lungs as
15 the region of pathology and also a region that
16 could benefit from some therapeutic
17 interventions.

18 Is there a particular part of
19 the lungs that you had in mind?

20 A. Well, the disease itself
21 appears to be an issue regarding the pulmonary
22 vasculature and the resistance through the
23 pulmonary vasculature, and that means that you
24 are likely going to need to target a pretty
25 broad spectrum of the lung tissue because it's

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2 well perfused on high populations of
3 capillaries and arterials and venials.

4 The other side to that knowing
5 about lung anatomy is there's a lot of ability
6 for materials that enter the bloodstream to
7 actually contact a lot of those tissues without
8 you actually contacting them directly. The
9 bloodstream is pretty effective about moving
10 things through those tissues. So I wouldn't be
11 halted as a POSA knowing that I couldn't
12 actually reach every single cell in the lung
13 with my delivery system.

14 Q. Returning to paragraph 73 and
15 the numbered items, what did you consider with
16 respect to No. 4 the rapidity with which
17 innovations were made?

18 A. I think that becomes an area
19 where in my knowledge of what is going on in
20 inhalation delivery in particular, I am aware
21 of and typically attend meetings at least
22 annually where if presentations are being given
23 where there's new innovations, significant
24 innovations in the area, they're likely to be
25 being discussed at those particular meetings.

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2 And so my context sort of
3 reviewing this at the time of -- in the near
4 2006 is the recollection of how many
5 technologies were known at the time and whether
6 there was a significant change in the number of
7 those or the knowledge of how one delivers
8 materials via inhalation was changing around
9 the time of 2006.

10 Q. Is it your opinion that this
11 area is one in which innovations were made
12 rapidly?

13 A. Well, to be honest in the
14 world of drug development, nothing is as rapid
15 as we want it to be. There's a lot of work and
16 effort that goes into actually bringing any
17 idea into the commercial space certainly if
18 that's your end point for innovation or even
19 just bringing about a change in direction.

20 So in drug development I don't
21 really qualify anything as rapid. Were there
22 new ideas being discussed? In the mid 2000s
23 there were -- yeah, there were new ideas, but
24 they weren't paradigm changing ideas.

25 Q. Okay. Are you a POSA as you

1 MAUREEN DONOVAN, Ph.D.

2 define that person in your declaration?

3 A. That's what I was looking for
4 before. I was trying to find where I placed my
5 definition of POSA. I know it's in here.

6 Q. If you will permit me, I think
7 it's at paragraph 74.

8 A. All right. I was looking for
9 a heading so. And, yes, I believe I was a POSA
10 as described in paragraph 74.

11 Q. And were you a POSA as of May
12 of 2006?

13 A. Yes.

14 Q. Are you aware that the patent
15 owner in this case has a different view on what
16 a POSA is?

17 MR. MATHAS: Object to the form.

18 BY THE WITNESS:

19 A. Yeah, I mean, I am aware that
20 there have been different interpretations of
21 the definition of POSA and different rulings
22 from the court regarding that and different
23 acceptances of different versions of definition
24 of POSA. So if you want me -- I don't know. I
25 think I need to see something specifically and

1 MAUREEN DONOVAN, Ph.D.

2 then agree that I have seen that and you place
3 it in time and place regarding what it means
4 regarding this particular discussion.

5 BY MS. ASCARRUNZ:

6 Q. Okay. Let me ask this
7 instead.

8 In your opinions the POSA that
9 you had in mind was the POSA as you have
10 defined it in paragraphs 72 through 74,
11 correct?

12 A. Well, in developing my
13 opinions initially in the previous case, more
14 likely when I became aware of the other
15 possible definitions of POSA I recognized
16 those. I evaluated whether my opinions would
17 really change based on that, and I don't -- and
18 they wouldn't, but I still believe that my
19 definition of POSA is accurate.

20 Q. Okay. And your definition of
21 a POSA is not different with respect to which
22 of the two patents we are talking about,
23 correct?

24 A. No, it's not.

25 Q. Okay. Okay. In your

1 MAUREEN DONOVAN, Ph.D.

2 declaration you talk about several prior art
3 references. Today I am only going to ask you
4 about four of them: The Voswinckel reference,
5 the Ghofrani reference, the Patton reference,
6 and the Chaudry reference.

7 When I use those names, do you
8 understand what I am referring to?

9 A. As long as you are referring
10 to the ones that I have described in brief in
11 my declarations, I will recognize that those
12 are what you mean.

13 Q. Great. I am trying to use the
14 names that you gave them so.

15 A. Right.

16 Q. Okay.

17 THE VIDEOGRAPHER: Going off the
18 record at 10:31 a.m.

19 (WHEREUPON, discussion was had
20 off the record.)

21 THE VIDEOGRAPHER: Going on the
22 record. The time is 10:32 a.m.

23
24
25

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2 (WHEREUPON, a certain document
3 was marked Deposition Exhibit
4 1003, for identification,
5 as of 4/4/18.)

6 BY MS. ASCARRUNZ:

7 Q. So I have handed you what's
8 been marked as Exhibit 1003, and that's the
9 same exhibit number in both IPR proceedings.

10 Do you recognize this as what
11 you refer to as the Voswinckel reference?

12 A. Yes, I do.

13 (WHEREUPON, a certain document
14 was marked Deposition Exhibit
15 1004, for identification,
16 as of 4/4/18.)

17 BY MS. ASCARRUNZ:

18 Q. I have now handed you what's
19 marked as Exhibit 1004 in both proceedings.

20 Do you recognize this as what
21 you refer to as the Chaudry reference?

22 A. Yes, I do.

23 MR. MATHAS: Just a point of
24 clarification. The Chaudry that you have
25 handed is in IPR 1621. I think it's the same

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2 number in both, but it may not be. So just to
3 be -- for clarity of the record, it is 1004 in
4 1621.

5 MS. ASCARRUNZ: Yes, so it is the
6 same number in both --

7 MR. MATHAS: Okay. Thank you.

8 MS. ASCARRUNZ: -- which is what I
9 think I tried to represent on the record.

10 MR. MATHAS: Thank you.

11 (WHEREUPON, a certain document
12 was marked Deposition Exhibit
13 1005, for identification,
14 as of 4/4/18.)

15 BY MS. ASCARRUNZ:

16 Q. The most recent exhibit that's
17 been handed you to is Exhibit 1005, and that's
18 the same exhibit in both proceedings.

19 Do you recognize this to be
20 the Ghofrani -- a translation of the Ghofrani
21 reference?

22 A. Yes.

23 Q. Okay. And then the last of
24 the four --

25

1 MAUREEN DONOVAN, Ph.D.

2 (WHEREUPON, a certain document
3 was marked Deposition Exhibit
4 1012, for identification,
5 as of 4/4/18.)

6 BY MS. ASCARRUNZ:

7 Q. -- is Exhibit 1012 in both
8 proceedings, and do you recognize this to be
9 the Patton reference?

10 A. Yes.

11 Q. Were these four references
12 provided to you by counsel, or did you
13 personally locate any of these four references?

14 A. These were provided to me by
15 counsel. I know how to locate most of them,
16 but the translation in particular was provided
17 by counsel.

18 Q. Okay. Are you providing an
19 expert opinion that the Voswinckel reference
20 was publicly accessible to a person of ordinary
21 skill in the art, or is that an assumption that
22 you were given by counsel?

23 A. No, I found that particular
24 abstract citation myself. So I know it's
25 publicly -- or it was certainly publicly

1 MAUREEN DONOVAN, Ph.D.

2 available to me when I looked.

3 Q. Where did you find that
4 particular abstract citation yourself?

5 A. I looked in Web of Science.

6 Q. So I am not sure that answered
7 my question.

8 So are you providing an expert
9 opinion that Voswinckel was publicly accessible
10 to a person of ordinary skill in the art?

11 A. Well, I am telling you that I
12 looked for it. I found it using a database
13 that was certainly available at the -- in 2004,
14 2005 when this probably appeared on the
15 database, but I don't have actual direct
16 knowledge that -- I didn't search it in 2004,
17 2005. So I can't absolutely say, but knowing
18 the Web of Science and what they abstract and
19 how they go about approaching what's on -- in
20 their database, they have maybe a six-week lag
21 time in getting new material into that
22 database.

23 I have no reason to expect
24 that if I can find it in their database in 2018
25 or 2017, that I wouldn't have found it shortly

1 MAUREEN DONOVAN, Ph.D.

2 after it had been published.

3 Q. You didn't include any of the
4 discussion of your search and what you found in
5 your declaration, correct?

6 A. I didn't feel I needed to. I
7 mean, they were available in hard copy. They
8 are available in libraries. The fact that I
9 could go and find it on Web of Science and
10 access it or at least know that it was
11 available in my library didn't seem to be
12 something that rose to the level of needing to
13 be in my report.

14 Q. Okay. Are you providing an
15 expert opinion that any of the other three
16 references: The Ghofrani reference, the
17 Chaudry reference, or the Patton reference was
18 publicly accessible to a person of ordinary
19 skill in the art?

20 A. Yes, in the same manner. I
21 know how to search patent publications and
22 could have found both the Chaudry and the
23 Patton publications in 2018 or whenever they
24 appear in the databases according to their
25 dates, and, again, I did look to see whether I

1 MAUREEN DONOVAN, Ph.D.

2 could access the Ghofrani publication.

3 I did find it in the
4 collection in my library, but I didn't actually
5 pursue whether I needed to inter-library loan
6 that or how I would have actually gone about
7 obtaining that, but in the same manner I --
8 both the electronic source that my library
9 subscribes to had this journal available
10 electronically before 2005. And so I am -- I'm
11 perfectly willing to believe that if I had
12 looked in 2005 or any time after that, I would
13 have been able to find this and obtain a copy
14 of the original paper.

15 Now, whether -- whether I
16 needed to then have it translated or not,
17 depended on -- would depend on what information
18 I needed from the particular publication.

19 Q. Okay. You have stated that
20 you were willing to believe that had you looked
21 in 2005, you would have been able to find and
22 obtain a copy of the original paper.

23 In your declaration you did
24 not detail any steps that you took or that a
25 person of ordinary skill in the art would take

1 MAUREEN DONOVAN, Ph.D.

2 to locate that reference, correct?

3 A. I didn't but these are -- the
4 Ghofrani reference in particular Herz is a
5 recognized journal --

6 Q. I am just asking what was in
7 your declaration. That was not in your
8 declaration, correct?

9 MR. MATHAS: Object to the form.
10 You have got to let her answer, and then you
11 can ask your question again.

12 You may continue with your original
13 answer.

14 BY THE WITNESS:

15 A. Okay. Well, I was just going
16 to say that this was a well-known journal, and
17 patent publications are well known to be
18 publicly available. In my description of
19 information in my declaration, I -- it was --
20 it was a belief that everybody reading that
21 would appreciate that these were -- you know,
22 were publicly available.

23 They are in well-recognized
24 journals. Circulation a well-recognized
25 journal. There was no reason to believe that

1 MAUREEN DONOVAN, Ph.D.

2 somebody interested in a -- a particular POSA
3 interested in the area wouldn't be able to
4 access this information.

5 BY MS. ASCARRUNZ:

6 Q. Nowhere in your declaration do
7 you assess whether Voswinckel was searchable by
8 a subject or a key word, correct?

9 A. I don't recall that being a --
10 you know, the actual searching of the
11 information that I described as contemporary
12 prior art, how that was searchable isn't the
13 topic of this declaration and is typically not
14 the topic of any of my opinions or declarations
15 in most of the patent cases that I have been
16 involved in.

17 Q. I want to talk for a minute
18 about objective indicia.

19 You understand what I mean
20 when I say that?

21 A. I have a general understanding
22 of that, yes.

23 Q. Let's look at paragraph 207 in
24 your '240 declaration.

25 A. 207?

1 MAUREEN DONOVAN, Ph.D.

2 Q. Yes, and actually since this
3 is a little bit of a change in gear in topics,
4 we have been going for a little over an hour.
5 Would you like to take a break?

6 A. I would, yes.

7 THE VIDEOGRAPHER: Going off the
8 record. The time is 10:43 a.m.

9 (WHEREUPON, a recess was had at
10 10:43 a.m. until 10:55 a.m.)

11 THE VIDEOGRAPHER: Going on the
12 record. This marks the beginning of media
13 number 2. The time is now 10:55 a.m.

14 BY MS. ASCARRUNZ:

15 Q. Dr. Donovan, before we went on
16 the break, I started to have you turn to
17 paragraph 207.

18 A. Yes.

19 Q. And in that paragraph you
20 indicate quote: "Assuming the myriad teachings
21 of Voswinckel and Ghofrani are overcome, the
22 evidence of secondary considerations presented
23 during prosecution of the '240 patent does not
24 change my opinions."

25 What did you mean by that

1 MAUREEN DONOVAN, Ph.D.

2 statement?

3 A. Well, it means that secondary
4 considerations are something that should also
5 be evaluated when looking at obviousness, but
6 that none of the secondary considerations
7 identified during the prosecution of the '240
8 patent were of a level that were -- that would
9 overcome what was already in the prior art and
10 known to a POSA.

11 Q. Okay. In the tail end of that
12 paragraph, what you say does not change my
13 opinions.

14 Is it fair to say then that
15 you looked at the prior art, formed your
16 opinions on obviousness, and then looked to the
17 secondary considerations that were provided to
18 see if they changed your opinions?

19 MR. MATHAS: Object to the form.

20 BY THE WITNESS:

21 A. Not in that particular order.
22 I mean, just based on my own experiences, I
23 have a lot more knowledge without even looking
24 further into the prior art about a lot of
25 things about inhalation delivery. So I start

1 MAUREEN DONOVAN, Ph.D.

2 with that knowledge base.

3 I expand it regarding the
4 prior art that's available regarding these
5 particular topics, and certainly the secondary
6 considerations aspects go into that to help me
7 sort of identify whether there are other things
8 in the art that I need to become familiar with
9 or things that -- that -- again, just areas
10 that I perhaps need to be -- to broaden my
11 information that I am evaluating to form my
12 opinion, and then I form my opinion. So it's
13 not -- I don't really do things in a first
14 this, then that serial method.

15 BY MS. ASCARRUNZ:

16 Q. Okay. In the district court
17 proceeding, you did not consider objective
18 indicia in your opening report, correct?

19 MR. MATHAS: Object to the form.

20 BY THE WITNESS:

21 A. I don't recall. I would have
22 to take a look at my opening report to refresh
23 my memory.

24 BY MS. ASCARRUNZ:

25 Q. Okay. In -- at page 84 in

1 MAUREEN DONOVAN, Ph.D.

2 the -- I guess the header that is for the
3 section in which paragraph 207 was included,
4 the header there says: "Objective indicia of
5 non-obviousness do not overcome the strong
6 showing of obviousness."

7 What did you mean by that
8 header?

9 A. I think it's just another way
10 of essentially saying what's also said in
11 paragraph 207 that evaluating the objective --
12 the objective indicia of non-obviousness that
13 the rest of the prior art demonstrating the
14 obviousness of the claims, those objective
15 inertia which are not necessarily searchable in
16 the databases that I would look at don't
17 overcome -- don't replace, don't cause me to
18 evaluate in a -- I am trying to think of the
19 right way to say this, but knowing what those
20 objective indicia were that the plethora of
21 information in the art, those other issues
22 didn't rise to overcome or to make them a
23 significant consideration in light of what was
24 already available in the art that was obvious.

25 Q. Okay. What did you mean when

1 MAUREEN DONOVAN, Ph.D.

2 you said the objective indicia are not
3 necessarily searchable in the databases that
4 you would look to?

5 A. Well, one of the objective
6 indicia is commercial success, and I can't find
7 information about commercial success of
8 products in Web of Science.

9 Q. Okay. In paragraph 209 you
10 indicate that: "The benefits that patients
11 have experienced from TYVASO cannot be
12 attributed to the specific nebulizer."

13 Do you see that?

14 A. I see where it says that, yes.

15 Q. Isn't it a fact that there's a
16 single patient who has received TYVASO since it
17 was approved by the FDA that did not use the
18 specific nebulizer UTC developed for it?

19 A. I have no way of being able to
20 answer that. I actually suspect that there may
21 be patients who have used something other than
22 the nebulizer that it was approved for use but
23 that's outside of the FDA approval. I don't
24 know that it's common, but I wouldn't dismiss
25 it as a possibility.

1 MAUREEN DONOVAN, Ph.D.

2 Q. Why do you suspect that there
3 may be patients who have used something other
4 than the nebulizer that TYVASO was approved
5 with?

6 A. You know, things happen.
7 Something happens to a patient's nebulizer for
8 their -- that their supposed to use with TYVASO
9 and they need a dose of the drug, and they are
10 100 miles away from being able to find another
11 nebulizer yet they have a different brand. I
12 would suspect that somebody would at least
13 attempt to use a different nebulizer for that.
14 I don't know but things happen.

15 Q. Are you aware that TYVASO is
16 approved by the FDA not as a stand-alone drug,
17 but as a drug device combination?

18 A. That's my understanding, yes.

19 Q. You indicated that certain UT
20 patents effectively blocked anyone outside of
21 UTC from pursuing an inhalable drug product
22 containing treprostinil, correct?

23 A. I recall that being in one of
24 my reports, declarations.

25 Q. Well, let me ask it this way.

1 MAUREEN DONOVAN, Ph.D.

2 Is it your opinion that
3 certain United Therapeutics patents effectively
4 block anyone outside from United Therapeutics
5 from pursuing an inhalable drug product
6 containing treprostinil?

7 MR. MATHAS: Object to the form.

8 BY THE WITNESS:

9 A. Well, I think somebody outside
10 of UTC who was aware of those patents yet
11 wanted to commercialize something that involved
12 areas covered by those patents would -- could
13 work with UTC for a royalty potentially, but
14 from a -- from a free ability to commercialize
15 without having to do that, that would likely be
16 an element that they would decide that, you
17 know, they can't work in that area based on
18 those patents.

19 BY MS. ASCARRUNZ:

20 Q. Okay. You talked about
21 freedom to commercialize.

22 Would someone outside of UT be
23 free to investigate and develop inhalable
24 therapy containing treprostinil?

25 MR. MATHAS: Object to the form.

1 MAUREEN DONOVAN, Ph.D.

2 BY THE WITNESS:

3 A. I am a lot less familiar with
4 the requirements for essentially freedom to
5 use, and I know how I approach it as an
6 academic because typically those legal
7 standards aren't typically enforced against
8 academics because we are not -- the work that
9 we are doing isn't directly linked to trying to
10 move something into a commercial marketplace,
11 but the other individuals who have other goals
12 or missions have other constraints.

13 I know they exist. I just
14 don't know enough about them to be able to know
15 what they really can do and can't do, but I
16 understand that there -- the abilities to
17 freely operate are limited and prescribed.

18 BY MS. ASCARRUNZ:

19 Q. You are aware that the
20 individuals at the University of Giessen, in
21 fact, did pursue research into the inhalable
22 treatment with treprostinil, correct?

23 A. Well, I am going to refer to
24 the Voswinckel abstract, and those individuals
25 were located at Giessen in a number of -- even

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2 in my declaration, I refer to other people
3 referring to them as the group in Giessen. Yet
4 the abstract indicates that the work was
5 supported by Lung Rx which tells me that in
6 addition to their own independent work, somehow
7 they were either provided funding or some other
8 way of achieving doing this work.

9 Q. In coordination with Lung Rx?

10 A. Yes.

11 Q. Are you aware that Lung Rx is
12 a subsidiary of United Therapeutics?

13 A. I am vaguely aware that Lung
14 Rx has some relationship to what's currently
15 known as United Therapeutics.

16 Q. At page 31 of your '240
17 declaration, you start your discussion of
18 obviousness of the '240 patent, and if I could
19 direct your attention specifically to paragraph
20 71, you state that it is your opinion that the
21 asserted claims of the '240 patent would have
22 been obvious to a POSA in view of the teachings
23 of certain specific combinations of prior art.

24 Do you see that?

25 A. Well, I give specific examples

1 MAUREEN DONOVAN, Ph.D.

2 of those combinations, but, yes, that my
3 opinion was that those claims would have been
4 obvious to a POSA.

5 Q. Okay. And you list three
6 bullet points there of certain combinations of
7 prior art, correct?

8 A. That's correct.

9 Q. Are you aware that the Patent
10 Trial and Appeal Board instituted this trial
11 only as to one of those three grounds?

12 A. Yes, I am somewhat aware of
13 that.

14 Q. And it is your opinion that
15 the claims of the '240 patent are obvious over
16 Voswinckel in view of Patton and Ghofrani,
17 correct?

18 A. Yes, that's my opinion.

19 Q. And with respect to the '507
20 patent, it is your opinion that the claims of
21 that patent are obvious over Voswinckel in view
22 of Patton and Ghofrani and Chaudry, correct?

23 A. Yes.

24 Q. One of the references you
25 refer to is the Voswinckel reference?

1 MAUREEN DONOVAN, Ph.D.

2 A. Correct.

3 Q. And one place that you refer
4 to Voswinckel is paragraph 56, and you indicate
5 there in the last sentence that: "Voswinckel's
6 findings gained immediate interest as they were
7 cited in a 2005 paper by Sulica and Poon in
8 Expert Review of Cardiovascular Therapy."

9 Do you see that?

10 A. I do.

11 Q. Why did you find that to be
12 relevant?

13 A. Well, it tells me that people
14 were interested in what Voswinckel had reported
15 about inhaled treprostinil, and that they saw
16 the information that was presented by
17 Voswinckel either at the American Heart
18 Association meeting or read the abstract and
19 felt it was -- there was a reason to include it
20 in a review of the recent therapies that were
21 being investigated for pulmonary hypertension.

22 Q. Do you find it relevant that
23 no other reference has cited Voswinckel?

24 MR. MATHAS: Object to the form.

25

1 MAUREEN DONOVAN, Ph.D.

2 BY THE WITNESS:

3 A. It's my recollection that
4 after this abstract, Voswinckel published a
5 number of additional papers. He found -- he
6 seems to be a pretty prolific author, and my --
7 typically as a POSA, if there are publications
8 that have more information in them, more
9 details and so forth on a particular study that
10 may have been described in an abstract, that
11 the actual publication is the reference that's
12 cited instead of citing the abstract.

13 BY MS. ASCARRUNZ:

14 Q. Why is that?

15 A. Again, the publication
16 contains more extensive information. Perhaps
17 has some graphs, has some other information
18 included in it, and it makes it from a -- from
19 a reference citation standpoint something that
20 a writer could rely on for perhaps more than
21 just one or a few facts that are stated in the
22 abstract.

23 It gives people the
24 opportunity to look at more further methods,
25 descriptions, and so forth to learn how the

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2 particular study was done perhaps, and that's
3 just -- ends up being -- there's more
4 information often times, and so the actual
5 paper publication gets cited when it actually
6 appears in publication.

7 Q. Okay. Do you know for a fact
8 that the study in Voswinckel resulted in a
9 paper publication?

10 A. I have seen some of
11 Voswinckel's later works. I can't recall
12 specifically whether pieces of this study were
13 included in some of those papers. It's
14 referred to in other papers certainly.

15 Q. Is it your opinion that the
16 study in Voswinckel established the safety,
17 tolerability, and clinical efficacy of treating
18 pulmonary hypertension with inhaled
19 treprostinil?

20 A. Well, I believe what their
21 goal statement was that, as Voswinckel
22 describes it, their goal of this study was to
23 assess safety, tolerability, and clinical
24 efficacy in patients with severe pulmonary
25 hypertension, and the rest of the abstract goes

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2 on to describe that under the conditions that
3 they used, it was safe, the patients tolerated
4 it quite well, and they had patients that did
5 well enough and requested compassionate use
6 that they remained on the therapy outside of
7 the particular study. So I think they
8 accomplished their preliminary goals.

9 Q. So, yes, is it your opinion
10 that the study in Voswinckel established the
11 safety, tolerability, and clinical efficacy of
12 treating pulmonary hypertension with inhaled
13 treprostinil?

14 A. Yes, certainly under the
15 conditions of the investigation that they
16 conducted.

17 Q. Voswinckel was primarily an
18 acute study, right?

19 A. You mean acute a one-time
20 therapy. For most of the patients that
21 received it and for the portion of the study
22 where the actual pulmonary vascular resistance
23 and other measures were being made, yes, that
24 was a -- as reported here at least, appears to
25 be a one-time exposure for most of the

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2 patients, but, again, at least two of the
3 patients remained on that therapy for a long
4 period of time without continued, constant
5 evaluation of their pulmonary vascular
6 resistant and some of the other measures that
7 were clinically observed.

8 Q. And those two patients were
9 receiving compassionate treatment under the
10 study, correct?

11 A. That's what the authors refer
12 to it as, yes.

13 Q. What is compassionate
14 treatment?

15 A. Well, in -- I mean, my
16 understanding in human clinical evaluation and
17 Germany's requirements for human clinical
18 evaluation probably differ from the United
19 States, and I have a much better understanding
20 of what the regulations are in the United
21 States, but typically for human investigations,
22 you need to have protocols approved, and they
23 are very clear about the number of times a
24 person would receive an investigational agent.
25 What would be happening to them while they

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2 received it. What follow-up care perhaps would
3 be provided to them. A whole number of things.

4 And so at the time that these
5 authors likely identified what they were going
6 to do to conduct the study that involved the
7 Swan-Ganz catheretization and so forth, they
8 had not included a long-term follow-up leg or
9 follow-up treatment leg in their protocol, and
10 so since it appears that two of the patients
11 either requested or needed or everybody felt
12 that continuing that therapy was in their best
13 interest, the compassionate treatment arms
14 become an ability on an individual patient
15 basis to allow use of an investigational agent
16 outside of an approved protocol and current
17 clinical study.

18 I am sure that person -- a
19 person who is expert in compassionate use could
20 tell me that I am slightly generous in some of
21 my descriptions of how that works, but I think
22 that's a reasonable layperson's description of
23 what compassionate use was and in keeping with
24 this particular information in this abstract.

25 Q. Okay. In paragraph 80 you

1 MAUREEN DONOVAN, Ph.D.

2 state that you understand -- sorry, I will give
3 you a chance to get there.

4 You indicate there that you
5 understand that the October 2004 issue of
6 Circulation in which Voswinckel was published
7 was made available in libraries by at least
8 December 2004, and then you cite a footnote
9 there that I will represent to you is the
10 declaration of a Dr. Scott Bennett.

11 Do you see that?

12 A. Yes.

13 Q. Is it your own expert opinion
14 that the abstract issue of Circulation
15 containing Voswinckel was published and made
16 available in libraries by at least December
17 2004, or are you simply relying on Dr. Bennett
18 for that point?

19 A. Well, while I rely on
20 Dr. Bennett for the details, I look at the
21 materials provided with the Voswinckel
22 abstract, and in particular it includes the
23 journal face page, in essence, or the journal
24 cover, and the date on the journal tells me
25 that it was published and available October 26,

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2 2004.

3 So I mean it was published
4 before that. It became widely available by at
5 least October 26, 2004 to subscribers. The
6 libraries -- my library, for example, is a
7 subscriber. At the time probably received this
8 in hard copy. Mailing times and so forth, who
9 knows when they really got there, and by the
10 time it's indexed and put on the shelf, there
11 may be a couple of week lag.

12 So by at least December of
13 2004 is certainly in keeping with all of my
14 experience regarding how journals arrived in
15 libraries, how they were indexed, and when they
16 get to shelves or when they got to the, you
17 know, sort of new journal area often times
18 before they were actually shelved with the rest
19 of the collection.

20 Q. Okay. In the last part of
21 that paragraph, you indicate that materials
22 were given to all attendees at the conference
23 or after the conference.

24 How do you know that?

25 A. I have seen a press release

1 MAUREEN DONOVAN, Ph.D.

2 that indicates that, you know, that all -- that
3 there's -- that the journal abstracts or the --
4 the meeting presentation abstracts were
5 provided as -- in a CD-ROM format. They were
6 available online to meeting attendees, and that
7 they were -- they certainly appear in hard copy
8 as a supplement to the journal. And so the
9 press release tells me what the meeting
10 attendees got, and they got online access in
11 some manner for at least a year, I believe, and
12 then they actually got a CD-ROM of the
13 material.

14 Q. Okay. I'd like to turn your
15 attention to paragraph 108, and starting in
16 that section you begin your discussion of why
17 the preamble of claim 1 is met, correct, or is
18 obvious I should say -- let me strike that and
19 start again.

20 Starting in paragraph 108, you
21 begin your discussion of the preamble of claim
22 1, correct?

23 A. I am just trying to get placed
24 in where I am in my declaration or where we are
25 discussing in my declaration. Okay.

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2 Can I ask you to repeat the
3 question just to make sure that I am answering
4 the question that I thought I heard?

5 Q. Sure. Starting at paragraph
6 108, you begin your discussion of the preamble
7 of claim 1, correct?

8 A. Yes, in paragraph 108 it's a
9 subset of the first phrase in claim 1.

10 Q. Which is quote: "A method for
11 treating pulmonary hypertension," correct?

12 A. Correct.

13 Q. And the only reference you
14 cite to in this section is Voswinckel, correct?

15 A. In those specific paragraphs,
16 yes, but the other art that I rely on also
17 would have sufficed, but the information in
18 Voswinckel was very clear and is used as a --
19 as a -- one of the three articles in the '240
20 that I use to support my opinions.

21 Q. Okay. In paragraph 109 you
22 state in the second sentence that: "The 17
23 patients received a three-breath inhalation
24 treatment four times per day using a pulsed
25 ultrasonic nebulizer from Nebutech and a

1 MAUREEN DONOVAN, Ph.D.

2 formulation comprising 600 micrograms per mil
3 of treprostinil."

4 Do you see where I am?

5 A. I do, yep.

6 Q. When you refer to these 17
7 patients, you are referring to the 17 patients
8 in Voswinckel, correct?

9 A. Well, there were 17 patients
10 in the Voswinckel initial study. The patients
11 who received the treatment four times a day I
12 think are the subset of the two compassionate
13 use patients from that.

14 Q. Okay. This statement as
15 written here is incorrect; is that right?

16 A. Two of the 17 patients
17 received that three breath inhalation treatment
18 four times a day. The other 17 -- the other 15
19 received a three breath inhalation treatment as
20 part of the monitored portion of that study.

21 Q. So the part that states here
22 quote: "These 17 patients received a three
23 breath inhalation treatment four times per day"
24 is incorrect?

25 A. There should have been some

1 MAUREEN DONOVAN, Ph.D.

2 additional information included in that
3 sentence to make it clear.

4 Q. Okay. In fact 17 patients did
5 not receive three breath inhalation treatments
6 four times per day, correct?

7 A. As written in the abstract,
8 the 17 patients received the treatment using an
9 ultrasonic nebulizer as the treatment of three
10 breaths and were observed for two hours and
11 then two additional patients received
12 compassionate use using four inhalations per
13 day after the acute test was over.

14 Q. These 17 patients that
15 received a single treatment of three breaths
16 did so while they were there was pulmonary
17 artery catheter inserted into their heart
18 taking measurements, right?

19 A. That's my understanding of the
20 study design.

21 Q. So they weren't receiving
22 treatment and walking around their daily
23 routines, correct?

24 A. Not in this study, no.

25 Q. In the last part of paragraph

1 MAUREEN DONOVAN, Ph.D.

2 110, you state that: "Voswinckel did actually
3 teach a treatment for pulmonary hypertension."

4 Do you see that?

5 A. Yes, I see that.

6 Q. And that was based on the
7 conclusion that long-term treatment effects in
8 Voswinckel were promising, correct?

9 A. Or very promising, yes, based
10 in their statement that says exactly that.

11 Q. Only two patients in
12 Voswinckel actually received non-acute
13 treatment for pulmonary hypertension, correct?

14 A. In this particular study as
15 described, yes.

16 Q. And Voswinckel is actually
17 silent on the number of breaths or device that
18 was used for those two patients, isn't it?

19 A. Well, I believe that
20 Voswinckel tells us that they received the same
21 three breath treatment four times a day.

22 Q. Can you quote me where it says
23 that?

24 A. Well, what it says is that the
25 two patients with idiopathic pulmonary

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2 hypertension or PAH received compassionate
3 treatment with four inhalations of TRE per day
4 after the acute test, and when I refer back to
5 what they define as a TRE inhalation, it's the
6 use of the pulsed OptiNeb ultrasound nebulizer
7 three breaths TRE solution 600 micrograms per
8 mil.

9 Q. So is it an assumption that
10 you are making that the two patients were
11 treated with three breaths four times per day?

12 A. I am reading this as a POSA
13 would read an abstract and anticipate that if
14 they received a different treatment regimen,
15 that that information would also be included in
16 the abstract. Yet there's sufficient
17 information in the abstract here for me to use
18 their own controlled vocabulary and understand
19 what the inhalation of treprostinil per day was
20 in that compassionate use study.

21 Q. Would it make sense to treat
22 the 17 acute patients who were catheterized
23 with the same device that was being used to
24 treat chronically the two patients that were
25 treated for long-term?

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2 MR. MATHAS: Object to the form.

3 BY THE WITNESS:

4 A. Yeah, I don't understand the
5 question.

6 BY MS. ASCARRUNZ:

7 Q. I will withdraw it.

8 Does Voswinckel identify the
9 device that was used on the two compassionate
10 use patients?

11 A. Well, again, in keeping with
12 how the acute use inhalation is described with
13 the use of the pulsed OptiNeb ultrasound
14 nebulizer, that same inhalation is described or
15 terminology is used for the compassionate use.
16 So it is in keeping that those two patients
17 used the pulsed OptiNeb ultrasound nebulizer.

18 Q. If I could direct your
19 attention to paragraph 121, you agree that
20 Voswinckel does not expressly state that the
21 nebulizer generated a fixed amount per pulse,
22 correct?

23 A. Yes, as stated in that
24 paragraph.

25 Q. If you could go to paragraph

1 MAUREEN DONOVAN, Ph.D.

2 104, it's your opinion that Voswinckel
3 discloses the delivery of three distinct pulses
4 or breaths, correct?

5 A. That the Voswinckel describes
6 that their administration of treprostinil came
7 from a 600 microgram per mil solution using the
8 pulsed OptiNeb ultrasound nebulizer, and the
9 patients inhaled three breaths from that
10 nebulizer.

11 Q. So I am referring to the first
12 paragraph where you use the terminology:

13 "Device in three distinct pulses (breaths)."

14 Do you see that?

15 A. I see that.

16 Q. Okay. Are you equating pulses
17 with breaths?

18 A. Well, in the case of the
19 pulsed OptiNeb ultrasound nebulizer, the pulses
20 are associated with the output of the device
21 which means that the time the user should be
22 breathing in to receive the medication.

23 Q. How do you know that based on
24 the disclosure in Voswinckel?

25 A. Again, Voswinckel tells me

1 MAUREEN DONOVAN, Ph.D.
2 that it's a pulsed OptiNeb ultrasound
3 nebulizer. A POSA is well aware of what a
4 pulsed ultrasound nebulizer is and the
5 operating principles behind it and when one
6 breathes and one is emitting a dose. So it's
7 clear to a POSA from that description how that
8 was being administered.

9 Q. And is it clear to a POSA
10 based on simply the use of the terminology
11 pulsed ultrasonic nebulizer that there is to be
12 one breath for one pulse?

13 A. That's the traditional method
14 that one would use a pulsed ultrasonic
15 nebulizer.

16 Q. When you say traditional, what
17 do you base that on?

18 A. Based on other nebulizers
19 available, both ultrasound, jet, other
20 technologies that were being evaluated at the
21 time that if there was a -- a time of aerosol
22 delivery and a time of -- a period of time
23 where the aerosol wasn't being emitted from the
24 mouthpiece, that the person was instructed to
25 inhale in the aerosol being formed during the

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2 time that the nebulizer was sending that
3 aerosol out the mouthpiece, and some people
4 have now started or were referring to that as a
5 pulse of the aerosol.

6 Q. Okay. We will definitely talk
7 a little more through some of that a little bit
8 later.

9 Right now I want to turn to
10 Ghofrani and your paragraph 85. In that
11 paragraph you indicate that you understand that
12 the June 2005 issue of Herz in which Ghofrani
13 was published was made available in libraries
14 and online by at least July of 2005.

15 Do you see that?

16 A. I see that.

17 Q. Is that in your expert opinion
18 or are you relying on Dr. Bennett's expert
19 assessment for that point?

20 A. Well, I both used
21 Dr. Bennett's more familiar opinion regarding
22 how library -- how fast libraries actually
23 index and maybe hard copy available. I am
24 aware that Herz is available online. Its 2005
25 year was available or is available to me

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2 online, and my search told me that -- I don't
3 remember the exact year, but it was several
4 years before 2005 that that journal was
5 available online. So almost immediately
6 assessable whenever the publisher made those
7 publications available relative to the print
8 version.

9 Given that this is listed as
10 the fourth volume of 2005, I would have to go
11 back and look at what the fourth volume in date
12 referred to in Herz, but I'm certainly willing
13 to believe given -- just sitting here, I mean,
14 I could refer to Dr. Bennett's information. I
15 think he is more clear about this, but number
16 four would probably strike me as it was
17 probably April but -- which means it would
18 certainly have been catalogued and in the
19 library but July of 2005.

20 And if number four means
21 something different as far as what month or
22 series of dates it was published, it would be
23 with -- this article would have been available
24 probably within four to six weeks at the very
25 longest and probably earlier than that in hard

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2 copy in a library, and it would have been
3 online again as soon as the hard copy was
4 published or even before.

5 Q. Okay. The testimony that you
6 just gave and your observations about the
7 online availability of Herz were not detailed
8 in either of your declarations, correct?

9 A. I didn't expressly describe
10 how I went about looking at how to obtain the
11 art that I used in my -- and referred to in my
12 declaration. Yet there was no reason to
13 anticipate that it was any different than any
14 art -- other art that is normally obtained that
15 I obtain and use. Databases and libraries and
16 the dates on these are certainly with -- prior
17 to the priority date that we are discussing for
18 these two patents.

19 Q. Are you aware that Dr. Bennett
20 admitted he was mistaken about the July 2005
21 date at his deposition last week?

22 MR. MATHAS: Object to the form.

23 BY THE WITNESS:

24 A. Not specifically aware of
25 that, no.

1 MAUREEN DONOVAN, Ph.D.

2 BY MS. ASCARRUNZ:

3 Q. Have you had any conversations
4 with Dr. Bennett?

5 A. I have not.

6 Q. Were you aware of any of his
7 deposition testimony from last week?

8 A. I think I understood that he
9 had been deposed, but that's my level of
10 awareness.

11 Q. And you did not review his
12 deposition testimony from last week?

13 A. No.

14 Q. Let's look at paragraph 136.
15 You begin paragraph 136 by stating quote:
16 "Ghofrani further appears to describe" -- then
17 in italics -- "the very same study as
18 Voswinckel."

19 Do you see that?

20 A. I see that.

21 Q. But Voswinckel is not cited in
22 Ghofrani, correct?

23 A. You mean -- are we talking
24 about the abstract that we have been talking
25 about labeled as Voswinckel?

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2 Q. Yes, correct.

3 A. Let me double check, but my
4 recollection is that it's -- the abstract is
5 not in the citation list. There's an earlier
6 Voswinckel reference, but the abstract in
7 Circulation is not in the literature list in
8 Ghofrani but, yeah.

9 Q. Now, what is your basis to
10 conclude that it's the very same study?

11 A. Well, because the abstract or
12 the information -- the Voswinckel information
13 that's cited and that's number six, and number
14 six is used as a reference in the section in
15 Ghofrani about inhaled treprostiniil.

16 My recollection is that
17 that -- the European Heart Journal information
18 publication is -- used a six-minute exposure
19 from a nebulizer for the patients in that
20 study, and there were a different number of
21 patients in that study. So I know that in
22 the -- when Ghofrani then goes on to describe
23 in his first study 17 patients were treated and
24 goes on to describe some other things about it,
25 I know that it's not describing the work that

1 MAUREEN DONOVAN, Ph.D.

2 was conducted under the citation number six
3 which precedes that sentence.

4 Q. So the discussion in Ghofrani
5 cites to a reference numbered six that you
6 indicated you reviewed, correct?

7 A. Yeah, I have seen it, and
8 again I'm pretty sure, but I would appreciate
9 the opportunity to review it if we are going to
10 continue to talk about it that that used a
11 different dosing strategy compared to the
12 Voswinckel abstract in Circulation.

13 (WHEREUPON, a certain document
14 was marked Deposition Exhibit
15 1046, for identification,
16 as of 4/4/18.)

17 BY MS. ASCARRUNZ:

18 Q. I have just handed you what's
19 marked as Exhibit 1046 in both proceedings.

20 Is this the Voswinckel
21 reference that's cited in Ghofrani as reference
22 number six?

23 A. Yes. I'm sorry, yes, it is.

24 Q. Okay. And this reference --
25 is it your testimony that Ghofrani's discussion

1 MAUREEN DONOVAN, Ph.D.

2 of initial trials in Giessen which cites to
3 this document, in fact, should be read as
4 citing to Voswinckel?

5 MR. MATHAS: Object to the form.

6 BY THE WITNESS:

7 A. Well, I understand that the --
8 I mean both I understand and I am looking at
9 citation number six, and what citation number
10 six from Ghofrani the Voswinckel European Heart
11 Journal abstract doesn't describe the
12 conditions that are being described in the --
13 in the portion of that paragraph where the one
14 sentence starts "in this first study," and it
15 ends with occurring. So bracketed between
16 those two bracket sixes.

17 So a POSA would understand
18 that it's been mistakenly cited and that
19 sometimes happens, and so I wouldn't look to
20 the information in the Europe Heart Journal
21 abstract as being the study that's being
22 described in that section of that paragraph.

23 Q. On which basis do you conclude
24 that it's been mistakenly cited?

25 A. Well, again, it describes a

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2 different set of dosing conditions and a
3 different number of patients are the two
4 quantitative obvious differences.

5 Q. Okay. What is the
6 inconsistency of the different -- strike that.

7 What do you mean by different
8 set of dosing conditions?

9 A. Well, in the European Heart
10 Journal abstract, they are describing using an
11 OptiNeb ultrasound nebulizer using different
12 concentrations of treprostinil solution 16, 32,
13 48, and 64 micrograms per milliliter and
14 provide some information about how many
15 patients received each of those and the
16 measurement time over which they looked at
17 various of the experimental pulmonary
18 hypertension outcome measures that they chose.

19 And just the dose strategy is
20 very different than the dose strategy which in
21 the section in Ghofrani that we are -- we are
22 focused on talks about a 15 microgram
23 inhalation and the ability to dose up to 90
24 micrograms, and neither of those absolute doses
25 are even included in the description in the

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2 European Heart Journal abstract.

3 Q. Both references the Ghofrani
4 and this 1046 exhibit include treatments with
5 15 micrograms per inhalation, correct?

6 MR. MATHAS: Object to the form.

7 BY MS. ASCARRUNZ:

8 Q. Actually, strike that.

9 Why do you say that the two
10 dosing strategies are very different?

11 MR. MATHAS: Object to the form.

12 BY THE WITNESS:

13 A. Well, in the study being
14 described in Ghofrani, they only mention a
15 single dose that is being provided to the
16 patient. So 15 micrograms per inhalation.

17 In the European Heart Journal
18 abstract, they are looking at an escalating
19 dose study. They increase the concentration of
20 treprostnil and provide that as a nebulized
21 solution for inhalation for a certain period to
22 the patients in the study.

23 BY MS. ASCARRUNZ:

24 Q. Okay. So you testified that
25 the Ghofrani reference talks about a single

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2 dose to patients of 15 micrograms per
3 inhalation, correct?

4 A. That's how Ghofrani is
5 describing it.

6 Q. Okay. So I think that we have
7 established that the citation to reference six
8 in Ghofrani may not be fully supported or
9 consistent with the Voswinckel 1046 reference.

10 Is that fair?

11 MR. MATHAS: Object to the form.

12 BY THE WITNESS:

13 A. Well, I think there's other
14 information that's in Ghofrani that cites six
15 that uses the information from the European
16 Heart Journal abstract, but the citation to six
17 for the source of information about the 15
18 microgram per inhalation greater than 180
19 minutes up to 90 micrograms section of that
20 paragraph, that information did not come from
21 the abstract that was published in the European
22 Heart Journal.

23 BY MS. ASCARRUNZ:

24 Q. Okay. So that information
25 which includes, as you said, the 15 microgram

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2 per inhalation greater than 180 minutes up to
3 90 micrograms is not supported in Ghofrani by
4 any citation, correct?

5 MR. MATHAS: Object to the form.

6 BY THE WITNESS:

7 A. I actually didn't look at all
8 of the citations in Ghofrani, but it's my --
9 I -- based on dates and so forth, I think that
10 Ghofrani intended on citing something else
11 besides the European Heart Journal for that
12 section, and there are descriptions of
13 trials -- of these trials being conducted in
14 Giessen that are several sentences before the
15 area that we are starting, and since Ghofrani
16 at the time was in Giessen based on the author
17 list on this paper, he certainly had good
18 knowledge of those trials, but he mistakenly
19 cited the wrong abstract for a published form
20 of that information.

21 BY MS. ASCARRUNZ:

22 Q. Okay. The 1046 Voswinckel
23 reference used an ultrasound nebulizer in
24 continuous mode producing a constant stream of
25 aerosol for six minutes, correct?

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2 A. That's how a POSA would read
3 those methods, yes.

4 Q. That is not pulsed, correct?

5 A. It doesn't indicate that they
6 used it in a pulsed mode.

7 Q. What do you mean used it in a
8 pulsed mode?

9 A. Well, the OptiNeb ultrasound
10 nebulizer in some version of its history was a
11 continuous -- it produced aerosol on a
12 continuous basis, but how patients interacted
13 with that to limit wasting of the nebulized
14 aerosol and so forth could have been modified
15 pretty easily.

16 So but I don't -- there's
17 nothing in the abstract that makes me begin to
18 think that anything else besides the typical
19 operation of the OptiNeb ultrasound nebulizer
20 as described that it didn't operate in
21 continuous fashion for six minutes in this
22 particular study.

23 Q. Do you agree with me that a
24 pulse cannot last for six minutes?

25 A. No, I don't agree with that.

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2 Q. Why not?

3 A. The definition of -- or I mean
4 a pulse is however long the designer of that
5 pulse period designs -- describes it to be.

6 Q. Okay. So let me clarify.
7 Actually, let's come back to this. Okay.

8 Patton is another one of the
9 references you discuss in your declaration,
10 correct?

11 A. Yes, it is.

12 Q. And since, again, this is a
13 little bit of a change in gears, I haven't kept
14 track on how long we have been on this session,
15 but I assume it's about it an hour.

16 Do you want to take a break
17 now?

18 A. It depends. I mean, we are
19 approaching noon. We can go for another 20, 30
20 minutes or so if that's a reasonable amount of
21 time and then break for lunch, or we can take a
22 break now, go for another hour, break for
23 lunch. I am open to however you --

24 Q. So I can do both of those
25 things. I think the person whose comfort

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2 matters the most here is you.

3 A. I am comfortable going for
4 another 20 minutes or so but not much longer
5 than that.

6 Q. Okay. Let's shoot for that
7 then. Okay.

8 So I started to talk about
9 Patton is one of the references you discuss in
10 your declaration, correct?

11 A. Yes.

12 Q. And it's your opinion that
13 Patton teaches strategies to deliver a pulsed
14 dose precisely and efficiently, correct?

15 A. I take it that you must be
16 reading something from a paragraph I have
17 written. So if you could --

18 Q. Well, just speaking in the
19 general abstract, is it your opinion that
20 Patton teaches strategies to deliver a pulsed
21 dose precisely and efficiently?

22 MR. MATHAS: Object to the form.

23 BY THE WITNESS:

24 A. Again, if I used those
25 specific words, I'd appreciate being pointed to

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2 what paragraph they are in. I have another
3 paragraph open at the moment where I describe
4 that a -- describes a nebulizer that generates
5 a defined amount of medicament in a preselected
6 amount of compressed air from the compressor.

7 BY MS. ASCARRUNZ:

8 Q. Okay. Let's look at the last
9 paragraph of -- I mean, the last sentence of
10 paragraph 105.

11 A. 105. Okay. Would you like to
12 reask the question then?

13 Q. Yes. Is it your opinion that
14 the Patton teaches strategies to deliver a
15 pulsed dose precisely and efficiently?

16 A. Yes, it is.

17 Q. Could you point me to all of
18 the evidence you provide in Patton that teaches
19 anything at all about pulsed delivery?

20 MR. MATHAS: Object to the form.

21 BY THE WITNESS:

22 A. Well, Patton describes the
23 ability to place a -- the dose of aerosol
24 that's available for an individual to inhale
25 from a device, and Patton provides the

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2 opportunity for that activity to be repeated
3 to -- as many times as necessary to receive the
4 amount of drug that the patient is supposed to
5 receive.

6 And Patton -- Patton's
7 descriptions which, you know, I can go through
8 here page by page if you would like talk in
9 detail about the precision, the accuracy of the
10 dose that's placed into the device, and the
11 efficiency description is really always
12 attributed to there isn't any aerosol produced
13 that's lost to the atmosphere, that's lost to
14 other non-device areas. So we are not losing
15 any of the drug solution or dry powder in the
16 case of Patton also to -- that could never,
17 ever be administered to the patient.

18 That's what Patton's wording
19 on efficiency really is, but back to pulsed
20 dose, it is just a repetition of doses, and
21 Patton describes being able to give or utilize
22 the device in a manner where you would reload
23 and reinhale as frequently as needed to get the
24 number of doses that were intended, and on his
25 microprocessor there's the ability to count the

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2 number of doses that were placed into the
3 chamber. There's a number of other things that
4 in this describe being able to use this in
5 essence in a pulsed fashion where pulse
6 describes the repetition of dose availability.

7 Q. So is it your opinion that
8 Patton provides a teaching about pulsed dose
9 because it provides for a repetition of doses?

10 A. Well, Patton's device allows
11 for a user to inhale a series, you know, or a
12 specific aerosol containing a specific amount
13 of drug is made available for inhalation. If a
14 patient needs an integer based increase off of
15 that amount, they are able to use the device in
16 a -- and inhale, reactivate, place the aerosol,
17 make it available for inhalation, and then
18 reinhale. It's just a sequential availability
19 of aerosol.

20 And during -- between the
21 times that -- that that is happening then the
22 time that the patient needs to then re -- to
23 tell the inhaler that they want another amount
24 aerosolized, there is a pause. There is no
25 aerosol being formed, nor is there any aerosol

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2 being lost out of the system, and that is --
3 that describes what many in the art describe as
4 a pulse, a pulsed dose.

5 Q. You indicated that between the
6 times that drug is made available for
7 inhalation that there is a pause where there is
8 no aerosol being formed.

9 How long is that pause?

10 A. In the Patton device?

11 Q. (No audible response.)

12 A. It is as long as the
13 individual or whoever the operator is chooses
14 that to be.

15 Q. Could it be a minute?

16 A. Again, there's no information
17 provided in Patton about how long it actually
18 takes to accomplish the aerosolization
19 activity, but a POSA's knowledge in the area
20 and certainly in the -- in some of the further
21 work that also was reported by Patton, it
22 doesn't take long.

23 It's not a -- that's not a
24 limitation to this device. So one could assume
25 that it only takes a few seconds to actually

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2 form that aerosol and place it ready. So it
3 could be less than a minute. It depends on the
4 patient's interaction with the device and the
5 instructions for use.

6 Q. If a patient using the Patton
7 device inhales the drug that's made available
8 for inhalation and then takes ten seconds to
9 get the device ready to prepare the next bolus
10 of inhalation, and once that's done takes the
11 second dose of inhalation, is that using the
12 device in a pulsed manner?

13 A. Well, it's receiving two
14 separate doses or two separate amounts of the
15 drug in this case in one -- what do I usually
16 call that in -- well, anyway, two separate --
17 two separate amounts of the drug considered as
18 a -- the amount to achieve the desired dose for
19 that individual per -- per administration. So,
20 yes, it could easily be considered two pulses.

21 Q. Patton does not discuss
22 treating pulmonary hypertension, correct?

23 A. Patton's description is far
24 broader than -- than the development of -- or
25 the use of his invention for a specific disease

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2 in the pulmonary airways. So I mean he doesn't
3 limit any of the use to any particular disease
4 in the claims in particular or even in most of
5 the description he provides I think a couple of
6 example diseases, but it's a broader use. It
7 could be used for many treatments intended to
8 be directed to the lungs.

9 Q. So there's no express
10 discussion in Patton specifically of pulmonary
11 hypertension, correct?

12 A. That's my recollection, yes.

13 Q. Is it your opinion that Patton
14 teaches about accuracy of dosing?

15 A. Well, I think he certainly
16 acknowledges that, and I am looking at
17 paragraph with the line speaking to that at the
18 moment that precision in dose delivery was a
19 serious problem, and he was trying to address
20 that. Whether he addressed precision in a
21 manner that everybody would agree was accurate,
22 I think there's less detail provided in the in
23 Patton -- Patton written description.

24 Yet really what he is able to
25 accomplish is reproducibility, and in the world