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Transcript of Tami M. Brown-Brandl, Ph.D.

Date: January 29, 2025

Case: Smaxtec Inc., et al. -v- ST Reproductive Technologies, LLC (PTAB)

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WORLDWIDE COURT REPORTING & LITIGATION TECHNOLOGY

ST Reproductive Technologies, LLC EX2010

Smaxtec, Inc. v. ST Reproductive Technologies, LLC; No. IPR2024-00885

Page 1 of 293

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4
5 SMAXTEC INC. and
6 SMAXTEC ANIMAL CARE GMBH,
7 Petitioners

8 v.

9 ST REPRODUCTIVE TECHNOLOGIES, LLC,
10 Patent Owner

11
12 Case IPR2024-00875

13 Case IPR2024-00885

14
15 Deposition of TAMI M. BROWN-BRANDL, Ph.D.
16 Austin, Texas

17 Wednesday, January 29, 2025

18 8:52 a.m.

19
20 Job No.: 568546

21 Pages: 1 - 242

22 Reported By: Candice Andino, CSR No. 9332, RMR

1 Deposition of TAMI M. BROWN-BRANDL, Ph.D., held
2 at the offices of:

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6 515 Congress Avenue
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13 Pursuant to notice, before Candice Andino,
14 CSR No. 9332, RMR.
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C O N T E N T S

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E X H I B I T S

(Attached to transcript.)

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Exhibit 1040 Utility Patent Application Transmittal for IPR2024-00885	212

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

2 (Witness sworn.)

3 THE WITNESS: I do.

4 EXAMINATION

5 TAMI M. BROWN-BRANDL, Ph.D.,
6 having been first duly sworn, was examined and
7 testified as follows:

8 BY MR. LANDERS:

9 Q Good morning.

10 A Good morning.

11 Q My name is Thomas Landers. I'm an
12 attorney with the Akin law firm, and I represent
13 patent owners ST Reproductive Technologies, LLC.

14 And just for the record, today's
15 deposition, which may extend into tomorrow,
16 relates to two separate IPR proceedings. And one
17 proceeding is named IPR2024-00875. And the other
18 proceeding is IPR2024-00885. Now we can get
19 started.

20 Could you please state your full name for
21 the record.

22 A Yeah. My full name is Tami Marie

1 Brown-Brandl.

2 Q And for the record, could you provide your
3 home address?

4 A Yeah. 1735 BeechWood Drive, Aurora,
5 Nebraska 68818.

6 Q And, Dr. Brown-Brandl, how many times have
7 you been deposed before?

8 A This is my first time.

9 Q In any proceeding ever?

10 A In any proceeding ever, yeah.

11 Q Okay. So with that in mind, I'll go over
12 some deposition basics just to make sure you have
13 an understanding of, you know, kind of what we're
14 doing today and some of the ground rules. Okay?

15 A Okay.

16 Q So first of all, as you can see, the court
17 reporter is typing everything we say. She's doing
18 her best to get everything down on the record. So
19 it would help her and help everyone here if,
20 before you start providing your answer, you make
21 sure that I finish the question so that we're not
22 talking over one another.

1 A Perfect.

2 Q Okay. And I'll do the same. I'll let you
3 finish your answers.

4 And then in answering my questions, it
5 would help to use actual words, like "yes" or
6 "no," as opposed to nodding or shaking your head
7 because then the record would be more clear.

8 Does that make sense?

9 A Yeah, makes sense.

10 Q Okay. And then during the course of the
11 deposition, your attorney sitting here may object
12 to some of my questions, but those are just lawyer
13 objections. You still need to provide an
14 answer --

15 A Okay.

16 Q -- unless for some reason your attorney
17 has instructed you not to answer and you choose to
18 take that --

19 A Okay.

20 Q -- advice.

21 And then throughout the course of the
22 deposition, as well, if you need a break, just let

1 me know and I'll try to finish sort of the line of
2 questioning I'm on and come to a stopping point as
3 soon as I can.

4 A Okay.

5 Q I'll do my best.

6 But if there's a question pending and you
7 need to step out, I would ask that you at least
8 answer that -- that question.

9 A Okay.

10 Q And then related to the deposition, you do
11 understand today that you're under oath?

12 A Yes.

13 Q All right. And is there any reason why
14 you would not be able to provide accurate and
15 truthful testimony today?

16 A No.

17 Q And the other thing is, if I ask a
18 question and you don't understand what I'm saying,
19 I'll expect you to ask me to rephrase it.

20 A Yep.

21 Q Otherwise, I'm going to assume that you've
22 understood what I'm asking.

1 A Yes.

2 Q Okay. Dr. Brown-Brandl, the court
3 reporter is going to be handing you what's already
4 before an marked as Exhibit 1003 in the IPR-00875
5 proceeding. Strike that.

6 For clarity, the proceeding is
7 IPR2024-00875. And it's titled Declaration Of
8 Tami M. Brown-Brandl, Ph.D.

9 Dr. Brown-Brandl, do you recognize this as
10 a copy of your declaration pertaining to US Patent
11 Number 9,844,206?

12 A I do.

13 Q And throughout the course of today, as a
14 shorthand, would you understand if I refer to that
15 patent as "the '206 patent"?

16 A I do.

17 Q Okay. And if I refer to this -- since we
18 have two proceedings, if I refer to this
19 declaration as "the '206 declaration" or "the
20 '206 patent declaration," you'll understand what
21 I'm referring to; correct?

22 A I will.

1 Q So looking at the cover page here in front
2 of you, you do see where it says the case
3 number; correct?

4 A I do.

5 Q And you do understand that you're here to
6 testify in a -- what's called an Inter Partes
7 Review proceeding?

8 A I do.

9 Q And that that proceeding relates to the
10 '206 patent; right?

11 A Yes.

12 Q Okay. And above that case number, on the
13 cover page of Exhibit 1003, it says smaXtec Inc.
14 and smaXtec Animal Care GmbH.

15 Do you see that?

16 A I do.

17 Q Okay. And do you understand that
18 smaXtec Inc. and smaXtec Animal Care GmbH are
19 what's called the petitioners --

20 A Yes.

21 Q -- in these IPR proceedings?

22 A Yes.

1 Q Okay. And would you understand today if I
2 sort of referred to the -- these two petitioners
3 collectively as "smaXtec," you'll understand that
4 I'm referring to both petitioners?

5 A I will.

6 Q And then below the petitioner, it says
7 ST Reproductive Technologies, LLC, Patent Owner.

8 Do you see that?

9 A I do.

10 Q And you do understand that that entity is
11 the patent owner and the two IPRs that we'll be
12 discussing today?

13 A Yes.

14 Q And I may refer to the patent owner simply
15 as "patent owner" or perhaps as "ST," but you'll
16 understand I'm referring to this entity here on
17 the cover of Exhibit 1003?

18 A I will.

19 Q Okay. Dr. Brown-Brandl, the court
20 reporter has handed you what's been marked as
21 Exhibit 1003 in the other proceeding, which is
22 IPR2024-00885.

1 And do you recognize the exhibit in front
2 of you as your declaration pertaining to US
3 Patent Number 8,823,515?

4 A I do.

5 Q And for this patent, you'll understand if
6 I refer to it as "the '515 patent" today?

7 A Yes.

8 Q And you'll understand if I refer to this
9 second declaration as "the '515 patent
10 declaration," just to clarify the difference
11 between the two declarations?

12 A Yes.

13 Q Okay. Now, were you hired by smaXtec's
14 lawyers to provide expert opinions regarding the
15 validity of the '206 and '515 patents?

16 A I was. Yep.

17 Q And it was the attorneys who engaged you?

18 A Yes.

19 Q Okay. And you're being paid for your work
20 on this matter?

21 A I am.

22 Q Okay. Do you recall what you're being

1 paid?

2 A I think it's here. I think it's \$325 an
3 hour.

4 Q So what's in the declaration is still
5 accurate?

6 A Yes.

7 Q And, again, you have two declarations in
8 front of you; right?

9 A Yes.

10 Q Okay. And as we discussed, these were
11 submitted in two separate IPR proceedings.

12 You understand that; correct?

13 A Yes.

14 Q But you understand that the testimony you
15 provide today will be used in both of these
16 proceedings; correct?

17 A Yes.

18 Q And if your answer for some reason depends
19 on which proceeding I'm asking about, you'll ask
20 me to clarify; correct?

21 A I can clarify. Yep.

22 Q So --

1 MR. HACKMAN: Dr. Brown-Brandl, just to
2 make sure the court reporter has -- is able to
3 answer, just make sure that Mr. Landers can finish
4 his question before you answer.

5 THE WITNESS: Okay.

6 MR. LANDERS: Thank you.

7 THE WITNESS: Thank you.

8 Q (BY MR. LANDERS) So, Dr. Brown-Brandl,
9 sitting here today, do you stand by everything you
10 wrote in your two declarations for the '206 and
11 '515 patents?

12 A I do.

13 Q And sitting here today, do you have any
14 opinions regarding the validity of either the '206
15 or '515 patent that are not present in these two
16 declarations?

17 MR. HACKMAN: Objection. Form. Outside
18 the scope.

19 A Can you repeat the question.

20 Q (BY MR. LANDERS) Do you have any opinions
21 regarding the validity of the '206 and
22 '515 patents that would not be contained in these

1 two declarations?

2 MR. HACKMAN: Same objections.

3 A I think my opinions are -- are noted here
4 in the declarations.

5 Q (BY MR. LANDERS) And sitting here today,
6 are there any opinions in either of your two
7 declarations that have changed or that you would
8 like to change since you've written them?

9 A No.

10 Q So, as we sit here today, you do not have
11 any revisions, supplements, or amendments to your
12 declarations regarding the '515 and
13 '206 patents; is that accurate?

14 MR. HACKMAN: Objection. Form.

15 A The only thing is, we have one -- there is
16 one typo that was -- it's not really a typo, but
17 it was miswritten on the Laitinen as a minus 1.
18 And in the original patent filing, it is a
19 minus 1, but in the final copy, it was a -- it was
20 omitted.

21 Q (BY MR. LANDERS) And when you refer to
22 "the original patent filing," are you referring to

1 the file history of the Laitinen reference?

2 A Yes.

3 Q And in your opinion, does that
4 typographical error or the correction thereof
5 impact any of your opinions in your declaration?

6 A It does not.

7 Q Now, if it occurs to you during the course
8 of the deposition that you have -- strike that.

9 Are there any other revisions,
10 supplements, or amendments to your declarations
11 regarding the '515 and '206 patents other than the
12 typographical error, as you characterized it, that
13 we just discussed?

14 A No.

15 Q And if it occurs to you during the course
16 of the deposition that you have a different
17 opinion from what you've written, you will let me
18 know immediately; correct?

19 A I will.

20 Q Okay. So earlier we discussed that
21 smaXtec's attorneys engaged you.

22 Do you recall that?

1 A Yes.

2 Q So how were you first contacted to serve
3 as an expert for the '206 and '515 IPR
4 proceedings?

5 MR. HACKMAN: I'll caution the witness,
6 you can answer these questions, just make sure you
7 don't reveal the content of any privileged
8 discussions with the attorneys.

9 THE WITNESS: Okay.

10 A I don't remember. I don't recall if it
11 was an email first or a phone call first, but we
12 discussed it over a phone call.

13 Q (BY MR. LANDERS) Do you recall the name
14 of the attorney who you had a phone call with?

15 A Yeah. The attorney sitting here,
16 Blaine Hackman.

17 Q So Blaine Hackman possibly originally
18 emailed you but definitely had a phone call with
19 you regarding serving as an expert in these
20 proceedings?

21 A Yes.

22 Q Is that fair?

1 A Yes.

2 Q And that is how you were initially
3 contacted?

4 A Yes.

5 Q Do you know about when that was?

6 A Oh, I'm -- I have to remember. Probably
7 about a year ago.

8 Q And can you describe, without revealing
9 any communications with your attorneys, your
10 process for drafting your declarations?

11 A Yeah. We -- we discussed the case. I
12 looked up citations and references, and we -- we
13 worked together to create the -- the declaration.
14 Then I reviewed the declaration, made edits and
15 corrections. And when -- when I agreed that it
16 was correct, I -- I signed it and sent it back.

17 Q And when you say "we worked together to
18 create the declaration," what exactly do you mean?

19 A So I --

20 MR. HACKMAN: I just caution the witness.
21 Again, answer the question to the extent you don't
22 reveal the content of any communications.

1 THE WITNESS: Okay.

2 A So I provided the -- the scientific
3 background and the opinions in here. They
4 provided the legal language to create the -- the
5 declaration.

6 Q (BY MR. LANDERS) And when you say
7 "provided the scientific background and the
8 opinions," do you -- is that verbally?

9 A Both, verbally and written, yeah.

10 Q And which attorneys did you work with on
11 this report?

12 A Blaine -- Blaine Hackman was the main
13 attorney that I worked with. I also worked with
14 Jeff, and I don't recall his last name.

15 MR. HACKMAN: Jeff Plies, P-l-i-e-s.

16 Q (BY MR. LANDERS) You worked with
17 Blaine Hackman and Jeff Plies with the law firm
18 Dechert?

19 A Yep.

20 Q Any other attorneys that you worked with
21 in preparing your declaration?

22 A No.

1 Q And what steps did you take to prepare for
2 today's deposition?

3 MR. HACKMAN: Again, I'll just caution
4 that you can discuss anything that doesn't reveal
5 the privileged discussions with counsel.

6 A So in preparation, I reviewed both
7 declarations. I read some of the -- the
8 citations, and then had discussions with Blaine.

9 Q (BY MR. LANDERS) And when you say that
10 you "read some of the citations," are you
11 referring to what they call prior art references?

12 A Yes.

13 Q Did you review any other what you call
14 citations other than prior art references that are
15 within your declaration?

16 A No.

17 Q Are there any specific prior art
18 references that you reviewed for today's
19 deposition?

20 A I -- I reread the Trevarthen thesis,
21 de Mol. I looked over several other ones.

22 Q Do you recall which ones?

1 A The patents that are listed here and --
2 and -- and the '206 declaration.

3 Q Are you referring to prior art patents, or
4 are you referring to the '206 patent itself?

5 A Both. The prior art patents and the
6 '206 patent and the one -- the '515 patent.

7 Q So you read Trevvarthen and de Mol, and you
8 reviewed the patents listed in the '206
9 declaration, including the '206 patent itself, as
10 well as the '505?

11 A '515.

12 Q Patent?

13 A Yes, the '515 patent, the '206 patent.

14 Q Any other specific documents you reviewed
15 to prepare for today's deposition?

16 A No.

17 Q And how long did you spend preparing for
18 this deposition?

19 A Oh, I prepared several days before I
20 arrived. And we had discussions for about a day
21 and a half.

22 Q So you prepared on your own for several

1 days and then had discussions with attorneys for
2 about a day and a half; is that fair?

3 A Yeah. Yep.

4 Q And was this day and a half yesterday and
5 then half of the day the day before?

6 A It was.

7 Q And then when you prepared on your own for
8 several days, that would've been the days
9 immediately preceding the day and a half?

10 A Yeah, a little bit over -- over the
11 holiday and then mostly a week or so before.

12 Q And what holiday are you referring to?

13 A The Christmas/New Year holiday.

14 Q So you prepared for today's deposition on
15 your own a week or so before the holiday, during
16 the holiday, and then a day and a half yesterday
17 and the day before with attorneys?

18 A I prepared a few days over the
19 Christmas/New Year holiday about a week, week and
20 a half before coming here, and then a day and a
21 half here.

22 Q Thank you.

1 Did you meet with any non-attorneys to
2 prepare for today's deposition?

3 A I did not.

4 Q Did you meet with any non-attorneys to
5 prepare your declarations?

6 A I did not.

7 Q Have you had any conversations with
8 someone named Dr. Steve Warren?

9 A No.

10 Q Are you familiar with Dr. Steve Warren?

11 A I am not.

12 Q You've never heard that name before?

13 A I can't -- I don't remember talking to
14 that person. I don't remember that person.

15 Q Have you ever met with a man named
16 Dr. Darrin Young?

17 A The name sounds familiar, but I don't
18 believe so.

19 Q So Dr. Warren or Dr. Young would not have
20 discussed either your declaration or today's
21 deposition with you.

22 Is that fair to say?

1 A That's fair to say.

2 Q Have you consulted with any other experts
3 to prepare either your declaration or for your
4 deposition today?

5 A I have not.

6 Q In preparing your declarations, did you
7 review any source code?

8 A Like, computer programs?

9 Q Yes.

10 A Is that what you mean?

11 A No.

12 Q So just to be clear, in your analysis of
13 the claims of the '206 and '515 patents, you did
14 not review any source code at all; is that
15 correct?

16 A That is fair.

17 Q And will you understand, when I refer
18 to -- strike that.

19 So in your analysis, you formed some
20 opinions related to the validity of the '206 and
21 '515 patents; right?

22 MR. HACKMAN: Objection. Form.

1 A Can you rephrase the question.

2 Q (BY MR. LANDERS) Yes.

3 So your declaration pertains to the
4 validity of the '206 and '515 patents; right?

5 MR. HACKMAN: Objection. Form.

6 A We compared prior art and -- to discuss
7 those claims.

8 Q (BY MR. LANDERS) And when you refer to
9 "those claims," you're referring to the challenged
10 claims of the '206 and '515 patents; right?

11 A We compared -- we prepared this
12 declaration, yeah, in the -- in certain aspects of
13 the '206 and '515 patents.

14 Q What do you mean by "certain aspects"?

15 A As listed in my declaration, there are
16 just certain claims that we -- we talked about.

17 Q Right.

18 And if I refer to those certain claims as
19 "the challenged claims," you'll understand what
20 I'm referring to; right?

21 A Yes.

22 Q And when you say that you compared prior

1 art to the challenged claims, do you mean that you
2 compared the prior art to the claim elements of
3 the challenged claims?

4 A Yes.

5 Q And in your view, the contents of any
6 source code in the prior art was not needed to
7 show whether elements of the challenged claims
8 were disclosed in the prior art.

9 Is that fair to say?

10 MR. HACKMAN: Objection. Form. Outside
11 the scope.

12 A The -- the patents don't provide any
13 source code and don't provide any specific source
14 code, so we did not look at any source code for
15 any of these prior art that we provided.

16 Q (BY MR. LANDERS) So in your view, you
17 would not need to look at source code and the
18 prior art to determine whether the prior art
19 disclosed the elements of the challenged
20 claims; is that correct?

21 MR. HACKMAN: Objection. Form. Outside
22 the scope.

1 A So the -- the -- the original patent
2 doesn't -- is broader than a specific source code,
3 so we did not review any source code.

4 Q (BY MR. LANDERS) And do you think you
5 would need to review source code to determine
6 whether the prior art disclosed the elements of
7 the challenged claims?

8 MR. HACKMAN: Objection. Form. Outside
9 the scope.

10 A So the -- the source code would provide
11 exactly how -- how a company is -- is -- is
12 executing their program; however, source code can
13 change, and that wouldn't affect the patent. So I
14 don't believe that reviewing source code of today
15 or of 2009 would be helpful in -- in answering
16 those questions.

17 Q (BY MR. LANDERS) So you don't believe
18 that reviewing source code of today or of 2009
19 would be helpful in determining whether the prior
20 art disclosed the specific claim elements of the
21 challenged claims?

22 MR. HACKMAN: Objection. Form. Outside

1 the scope.

2 A The -- the claims of the patent are -- are
3 listed, and those are what we compared to. Like
4 I -- like I stated, if -- if you look at source
5 code, equations can change and those kind of
6 things, which would make looking at source code --
7 it would be very limiting to a patent if it
8 actually disclosed all of the source code, in my
9 opinion.

10 Q (BY MR. LANDERS) So you didn't think
11 reviewing the source code would be necessary to
12 analyze the prior art as compared to the
13 challenged claims?

14 MR. HACKMAN: Objection. Form. Outside
15 the scope.

16 A That is -- that is correct.

17 Q (BY MR. LANDERS) If you could pull your
18 '206 declaration up for me.

19 A Yep.

20 Q Okay. And this is more to get comfortable
21 with common terminology, to make sure I
22 understand --

1 A Okay.

2 Q -- some things correctly before we move
3 on.

4 If you could turn to page 9 of the '206
5 declaration. At the top, it should say
6 Obviousness.

7 A Yeah, let me get there. Yes.

8 Q Okay. And I'm looking at paragraph 18.
9 Are you with me?

10 A I am.

11 Q Okay. And about six lines down, you refer
12 to something called the, quote/unquote, POSA?

13 A Yes.

14 Q And that's a term I plan on using in
15 today's deposition, so I just want to make sure
16 we're on the same page.

17 When I refer to "POSA," I'm referring to
18 the person of ordinary skill in the art and the
19 relevant field at the time of the invention.

20 Do you have the same understanding?

21 A I have the same understanding. Actually,
22 we -- we do define that in paragraph 11 -- or on

1 page 11, paragraph 24. And so we -- we define
2 what we believe is a POSA that is relevant in
3 this -- in these proceedings.

4 Q So if today I refer -- strike that.

5 You stand by your opinion in paragraph 24?

6 A I do.

7 Q And would that pertain to both the '515
8 and '206 patents?

9 A Let me double-check. I believe so.

10 But...

11 Yes. The -- yes. Those definitions are
12 the same.

13 Q (BY MR. LANDERS) And just to be clear --
14 and I'm referring to this paragraph 24 of your
15 '206 patent declaration.

16 Just to confirm that when I refer to "the
17 POSA" and "the time of the invention," the time of
18 the invention is this September 15th, 2009, date.

19 Do you have the same understanding?

20 A I do.

21 Q Okay. I'll probably be using the two
22 declarations quite a bit, so you can keep that in

1 front of you.

2 A Okay.

3 Q But I'm going to introduce -- well, not
4 introduce -- I'm going to provide another exhibit
5 for you.

6 Dr. Brown-Brandl, the court reporter is
7 handing you what has been introduced in both
8 proceedings as Exhibit 1004, and it's titled
9 Tami M. Brown-Brandl, Ph.D., and it appears to be
10 a CV.

11 Have you seen this document before,
12 Dr. Brown-Brandl?

13 A Yes. I -- I created this document, and I
14 continually update this document.

15 Q And, as far as you know, is Exhibit 2004
16 [sic] current for purposes of these proceedings?

17 A For purposes of these proceedings, it is
18 current. There have been a few added publications
19 and also a few added invited presentations, is my
20 guess.

21 Q And would those presentations and
22 publications pertain to the field of animal

1 science and...

2 A So I'm an agricultural engineer, and I
3 deal with precision animal management, which is
4 the application of technology to the -- directly
5 in the animal environment or in the -- in the
6 barn. And so the presentations and publications
7 have to deal with that -- that topic.

8 Q So any presentations or publications that
9 are not listed on the CV would pertain to the
10 topic that you just discussed?

11 A Absolutely.

12 Q And who is your present employer?

13 A My present employer is the University of
14 Nebraska in Lincoln.

15 Q Any other employers?

16 A No.

17 Q And before being contacted for these
18 proceedings, did you have any relationship with
19 smaXtec?

20 A I did not.

21 Q And before being contacted for these
22 proceedings, did you have any relationship with

1 anyone at the Dechert law firm?

2 A I did not.

3 Q Do you know how Mr. Hackman became aware
4 of you and reached out to you?

5 A I -- I don't know. My guess is looking at
6 the -- the literature and my previous presen- --
7 or my previous publications.

8 Q So before these proceedings, you've never
9 worked with smaXtec; is that correct?

10 A That is correct.

11 Q And before these proceedings, had you ever
12 heard of ST Reproductive Technologies?

13 A I have not.

14 Q And before these proceedings, had you ever
15 heard of smaXtec?

16 A I have not. Since that time, I was at --
17 at a conference, and I saw their name on a booth.
18 I did not talk to them at that time. They are
19 also working in a -- working on an
20 international -- an international conference that
21 will be held in June. And one of my committee
22 members has reached out to smaXtec for a donation

1 for that conference, and we are working on -- on
2 receiving a -- and I believe it's going to be a
3 \$500 donation for that conference.

4 Q What is the name of that conference?

5 A It is the US Precision Livestock Farming
6 Conference.

7 Q Who is the committee member who reached
8 out to smaXtec for a donation for that conference?

9 A Courtney -- and I have -- I'm remembering
10 her last name. It starts with a D. She's -- she
11 is an employee of university -- or Texas A&M
12 University. I -- can I look for that name later
13 and give that to you later?

14 Q Sure.

15 And what is your relationship with
16 Courtney?

17 A She is one of my committee members.

18 Q And what does the relationship of
19 committee member entail?

20 A So I have several committees, and I'm the
21 chair of the conference. So I have a -- a chair
22 for proceedings, a chair for program, a chair for

1 tours, and a sponsor chair.

2 And she is a co-chair of the -- of the
3 program committee. So her job is to work with
4 another individual and a subsequent group of
5 people to put together the program, so which --
6 which presentations are going to occur when.

7 Q Did Courtney hear about smaXtec through
8 you?

9 A No.

10 Q Have you ever served as an expert in any
11 proceedings before this?

12 A I have not.

13 Q Have you ever -- strike that.

14 Do you consider yourself -- yourself an
15 expert in software?

16 A I use software. I would not consider
17 myself an expert in writing software.

18 Q Would you consider yourself an expert in
19 using software?

20 A My postdoc and my students write a lot of
21 software, so yes, I would -- I would consider
22 myself an expert in -- in applications that regard

1 software or the development of software.

2 Q Do you consider yourself a computer
3 expert?

4 MR. HACKMAN: Objection. Form.

5 A My -- my expertise is developing systems
6 for livestock production. I am not a computer
7 scientist, and I am not -- yeah. So I'm not
8 really an expert in building computers. I guess
9 I'm not understanding exactly what you mean by am
10 I an expert in computers.

11 Q (BY MR. LANDERS) Would you consider
12 yourself an expert in assessing the public
13 accessibility of prior art documents?

14 MR. HACKMAN: Objection. Form.

15 A I am not an expert in -- in that. I -- I
16 use those search engines and -- on a -- on a daily
17 basis. Understanding exactly how they -- they
18 function, I am not an expert in that.

19 Q (BY MR. LANDERS) Would you consider
20 yourself qualified to assess the public
21 accessibility of a document using search engines?

22 MR. HACKMAN: Objection. Form.

1 A That -- that isn't necessarily my area of
2 expertise. Like I said, I use search engines on
3 at least a weekly basis, if not several times a
4 week. But knowing exactly when something is put
5 on there and I -- I have never dug into how
6 exactly that works.

7 Q (BY MR. LANDERS) So you would not
8 consider yourself qualified to understand exactly
9 when a document was put on a search engine.

10 Is that fair to say?

11 MR. HACKMAN: Objection. Form.
12 Mischaracterizes the testimony.

13 A I -- I -- like I said, I use search
14 engines on a regular basis. I don't -- I have not
15 dug into exactly how to know when they're put on
16 there. I have used limited searches. I'm not
17 sure how -- I'm not sure that that really tells
18 you when they were put on there. It's more a
19 function of the date that is -- that is provided
20 when you use citation, like Google Scholar or
21 Scopus. It's more of the date of the publication.
22 Google itself, I -- I don't know exactly

1 how it works, but my understanding is that Google
2 has a little different approach to understanding
3 when something was put on there. And it could be
4 when the page is last updated, not necessarily
5 when the document -- the date on the document.

6 MR. LANDERS: For the record, I'm going to
7 object to that as a nonresponsive answer.

8 Q (BY MR. LANDERS) I was asking about your
9 qualifications.

10 A Okay.

11 Q So just to be clear, you would not
12 consider yourself qualified to assess exactly when
13 a document was placed on a search engine.

14 Is that fair to say?

15 A That's fair to say.

16 MR. HACKMAN: Objection. Form.

17 Q (BY MR. LANDERS) And you would not
18 consider yourself qualified to assess exactly when
19 a document was indexed by a search engine.

20 Is that also fair to say?

21 MR. HACKMAN: Objection. Form. Outside
22 the scope.

1 A Yes, that is fair to say.

2 Q (BY MR. LANDERS) Dr. Brown-Brandl, do you
3 have experience with counterpropagating networks?

4 A I am not -- I'm not familiar with that
5 term.

6 Q You're not familiar with the term
7 "counterpropagating networks"?

8 A I am not.

9 Q What about counterpropagation networks?

10 A I am not.

11 Q Are you familiar with the term "neural
12 networks"?

13 A I am.

14 Q What is your understanding of what a
15 neural network is?

16 A A neural network is -- is a model that you
17 feed it in data, and you have a certain number of
18 inputs and a certain number of outputs, and the
19 computer finds the important -- important nodes
20 within that.

21 And so it can then give you output without
22 giving you specific equations to understand the

1 relationship between the inputs and the outputs.

2 Q So a neural network provides outputs
3 without using specific equations?

4 A You don't --

5 MR. HACKMAN: Objection. Form.

6 A A neural network doesn't -- you don't
7 input the specific equations; you give a -- you
8 give it inputs and outputs, and it forms those
9 relationships.

10 Q (BY MR. LANDERS) In software that
11 implements a neural network, does that software
12 contain a specific equation?

13 MR. HACKMAN: Objection. Form.

14 A Obviously, there are mathematical formulas
15 within the neural network that make those
16 relationships.

17 Q (BY MR. LANDERS) Are you familiar with
18 the term "inverse function"?

19 A I am.

20 Q And what is that?

21 A So that would say that two parameters are
22 inversely related, so when one parameter decreases

1 in value, the other parameter increases in value.

2 Q And are you aware that for some functions,
3 no inverse function exists?

4 MR. HACKMAN: Objection. Form. Outside
5 the scope.

6 A Can you -- can you repeat the question.

7 Q (BY MR. LANDERS) You have an inverse
8 function; right?

9 A Yes.

10 Q And that's based off of some original
11 function, right, that was inversed?

12 MR. HACKMAN: Same objections.

13 A You can have an inverse function without
14 having an original function; right?

15 Q (BY MR. LANDERS) So going back to your
16 testimony, you testified that the term "inverse
17 function" is when two parameters are inversely
18 related, so when one parameter decreases in value,
19 the other parameter increases in value.

20 Do you stand by that testimony?

21 A Yes.

22 Q And that's your understanding of an

1 inverse function?

2 A That is my understanding.

3 Q And if two parameters are not inversely
4 related, then you would not have an inverse
5 function.

6 Is that fair to say?

7 A That is fair to say.

8 Q So would you consider your expertise to be
9 agricultural and biosystems engineering?

10 A I would.

11 Q And in your experience, have you ever
12 studied the impact of giving certain medicaments
13 to certain animals?

14 A I'm not familiar with the term
15 "indicaments."

16 Q I said "medicaments."

17 A Okay.

18 Q But medication?

19 A Oh, medication.

20 Q I'll rephrase the question so that it's a
21 clear record.

22 A Yep.

1 Q In your experience, have you studied the
2 impact of giving certain medicines to certain
3 animals?

4 A I have not. We have studied the impact of
5 disease on -- on animal response, but not of
6 medications.

7 Q And what do you mean by "disease on animal
8 response"?

9 A So a couple different things. The impact
10 of prior -- so I'll give you examples. We have
11 looked at the impact of pneumonia on feedlot
12 cattle and how that impacts their response to --
13 to heat stress or to temperature.

14 And another example is, we have looked at
15 feeding behavior of -- of both feedlot cattle and
16 pigs and looked for a decrease in feeding behavior
17 to detect illness.

18 Q And you referred to "heat stress."

19 Do you recall that?

20 A I -- yes, I did refer to heat stress.

21 Q And would it be fair to say that heat
22 stress is not a type of illness?

1 A Heat stress is not a type of illness. It
2 is impacted by previous -- when an animal has been
3 previously impacted by an illness, that increases
4 their response to temperature.

5 Q So heat stress itself is not an
6 illness; right?

7 A Heat stress itself is not an illness, no.

8 Q And just going back to your testimony, you
9 said you have not studied the impact of giving
10 certain medicines to certain animals; is that
11 right?

12 A That is right. I have not.

13 Q And in studying the impact of disease on
14 animal response, have you studied or ever become
15 familiar with the impact of an illness or disease
16 on milk production?

17 A My studies have not included that
18 characteristic; however, my education, background,
19 and my -- being familiar with animal physiology
20 and in engineering, I have -- I've been taught
21 that.

22 Q Just to be clear, you have been taught the

1 impact that an illness or disease has on a cow's
2 milk production?

3 A Yeah. That's one thing that -- that we
4 have studied is the impact of -- of disease on --
5 on animal production, and animal production would
6 include milk production.

7 Q And certain illnesses can decrease milk
8 production.

9 Is that fair to say?

10 A That is fair to say, yes.

11 Q And certain illnesses can actually
12 increase milk production.

13 Is that fair to say?

14 A That, I -- I am not familiar with.

15 Q Well, certain illnesses will have no
16 impact on milk production.

17 Is that fair to say?

18 A That is fair to say.

19 Q Can you list any of the illnesses that
20 would not impact milk production?

21 A I would say things -- things like a
22 lameness wouldn't impact milk production. I --

1 I'm not a veterinarian, and I'm -- so I don't know
2 all of the ins and outs of different -- different
3 diseases. But, like, lameness would not impact
4 milk production.

5 Q So lameness is an illness that would not
6 impact milk production; right?

7 A That's right.

8 Q Can you think of any other illnesses that
9 would not impact milk production?

10 A Like I said, I'm not a veterinarian, and
11 so I don't know a lot of different diseases and
12 their direct impact on milk production.

13 Q So you can't think of any others besides
14 the lameness?

15 A I'm not -- I'm not familiar enough with
16 that field.

17 Q Okay. And earlier you testified that you
18 haven't studied the impact of giving medicine to
19 animals, but have you ever learned about impacts
20 that medicines can have on animals?

21 A That was not part of my education. I know
22 a lot about physiology and about engineering, but

1 not about medications or diseases.

2 Q Do you know whether -- strike that.

3 For illnesses that do impact milk
4 production, do you know how long it takes for the
5 illness to start impacting milk production?

6 A I do not, and I think it would depend on
7 the disease. It would depend on the severity of
8 the disease. And that would depend on individual
9 animals.

10 Q To your knowledge, though, for a cow's
11 milk production to deviate from its usual output
12 due to an illness, that deviation would not be
13 immediately after the animal incurs the
14 illness; right?

15 MR. HACKMAN: Objection. Form.

16 A I -- I don't know exactly what you mean by
17 immediate. There's -- and it really depends on
18 the disease, the animal, and the severity of the
19 disease. But -- so a decrease in milk production
20 could occur within a day, two days, but I don't
21 know exactly what you mean by immediate.

22 Q (BY MR. LANDERS) Can you give me an

1 example of an illness that decreases milk
2 production?

3 A Like, mastitis would decrease milk
4 production. And while I'm really not a expert in
5 this area, mastitis would decrease milk
6 production. The bird flu would increase -- or
7 decrease milk production. If I said -- I meant
8 decrease on both of those.

9 Q For mastitis, how long does it take for
10 the milk to start producing less -- strike that.

11 For mastitis, how long does it take for
12 the cow to start producing less milk after it gets
13 mastitis?

14 MR. HACKMAN: Objection. Form.

15 A I'm really not an expert, but I'm going to
16 go back to it depends on the severity of the
17 disease.

18 Q (BY MR. LANDERS) Would you give me the
19 same response for bird flu?

20 A I would.

21 Q Are you familiar with any medications for
22 mastitis?

1 A I know they give them antibiotics. But,
2 once again, I'm not a veterinarian so that's
3 really out of my wheelhouse.

4 Q Are you aware of whether the same
5 antibiotics can be given to a cow for different
6 diseases?

7 MR. HACKMAN: Objection to form.

8 A You know, I'm really not a veterinarian,
9 so that -- that's really not my wheelhouse.

10 Q (BY MR. LANDERS) So you don't know
11 whether the same antibiotic could be given to the
12 cow to treat different diseases?

13 A That is true.

14 MR. HACKMAN: Same objections.

15 Q (BY MR. LANDERS) So you don't know
16 whether a particular treatment corresponds to a
17 particular illness of a cow; right?

18 A Yeah, I don't have medical background, so
19 I would hate to -- I would hate to guess or give
20 an opinion on that.

21 Q Do you have an opinion on that?

22 A I do not.

1 Q And do you have personal experience
2 researching, developing, designing, or evaluating
3 RFID tracking and sensor systems for livestock
4 management?

5 A I do.

6 Q Do you consider yourself an expert in that
7 area?

8 A I would.

9 Q And with respect to sensor systems, are
10 you familiar with different types of temperature
11 sensors that could be used to measure a cow's
12 temperature?

13 A Yes.

14 Q What are some of the different types of
15 sensors that could be used?

16 A So in my own research, we have used
17 several different sensor systems. We have done
18 tympanic temperature, which is the temperature
19 near or at the tympanic membrane in the ear. We
20 have done rumen temperature. We have implanted
21 temperature sensors in the -- in the animal, in
22 the abdominal cavity of the animal. We have used

1 rectal temperatures to determine temperature. And
2 we've also -- I did a project looking at ear canal
3 temperature.

4 Q Are you familiar with an under-the-skin
5 temperature sensor?

6 MR. HACKMAN: Objection. Form.

7 A An under the -- I -- I have not used an
8 under-the-skin temperature sensor.

9 Q (BY MR. LANDERS) Are you familiar with
10 any under-the-skin temperature sensors?

11 MR. HACKMAN: Same objections.

12 A That is not something that I have done.

13 Q (BY MR. LANDERS) Going back to one of the
14 sensors you mentioned, I believe you said
15 "tympanic."

16 Could you spell that?

17 A Oh, I'm not a -- I'm an engineer, not a
18 speller.

19 Q Even just for the phonics of it. I just
20 want to make sure that I'm saying it right and
21 that the record is clear.

22 A Tympanic is t-y-m-p- -- and that -- I

1 don't know beyond that. Tympanic.

2 Q Okay. That's good enough. I wanted to
3 make sure I was saying it correctly.

4 Now, how is the tympanic sensor installed?

5 A In -- cattle is different than pigs. It's
6 basically -- the tympanic membrane is your
7 eardrum; right? And so you take a very thin -- we
8 use thermistors and go down the ear canal, and
9 then it's held at the very base of the ear canal.

10 Q So the tympanic sensor is not installed
11 under the animal's skin?

12 A It is not.

13 Q Would you consider the tympanic sensor an
14 external sensor?

15 MR. HACKMAN: Objection. Form.

16 A Yes. Ear canal temperature would also be
17 an external sensor.

18 Q (BY MR. LANDERS) So a tympanic sensor and
19 an ear canal temperature sensor would both be
20 considered external sensors to a person of skill?

21 A Yes.

22 Q Did you mention rectal temperature

1 sensors?

2 A Yes, I did.

3 Q Okay. And with respect to taking rectal
4 temperatures, there are a number of factors that
5 can actually influence the temperature reading; is
6 that accurate?

7 A Yes.

8 Q So number one would be the cow's internal
9 body temperature would impact the temperature
10 reading; right?

11 A Absolutely.

12 Q Can the cow's activity level change the
13 temperature reading that's sensed by the rectal
14 thermometer?

15 A Activity level can impact the deep body
16 temperature, so it would impact all different
17 temperatures regardless of how it is measured.

18 Q So regardless of which sensor you use, a
19 cow's activity level would impact the body
20 temperature; right?

21 A It would.

22 Q And activity level for any sensor would

1 impact the body temperature regardless of whether
2 the animal was ill; right?

3 A Repeat the question again, please.

4 Q For a cow that's not ill, the activity
5 level of the cow, using any sensor, would impact
6 the sensed temperature; right?

7 A That is correct.

8 MR. HACKMAN: Objection. Form.

9 Q (BY MR. LANDERS) And that's because the
10 body temperature itself of the cow fluctuates
11 based on activity level; right?

12 MR. HACKMAN: Objection. Form.

13 A Yes.

14 Q (BY MR. LANDERS) Going back to rectal
15 temperature sensors, can wind impact a temperature
16 reading?

17 A No. Well, let me clarify. Wind, as it
18 impacts the animal's body temperature itself,
19 would impact rectal temperature, but wind would
20 not directly impact the -- the sensor reading.
21 Does that make sense?

22 Q Yes.

1 So on a windy -- strike that.

2 On a relatively windy day, the cow's body
3 temperature would fluctuate, thereby impacting the
4 sensed temperature, again, because the body
5 temperature is impacted?

6 A Yeah. And if you look at my -- my -- some
7 of the references I list, we actually have
8 developed a -- an index that looks at multiple
9 different environmental factors and their relative
10 impact on the animal. So wind, solar radiation,
11 those kind of things all impact how -- it's like a
12 heat index or a feels-like index for humans.

13 Q Are you aware of any factors that would
14 impact the sensed temperature of a rectal
15 thermometer without impacting the body
16 temperature?

17 A When the animal defecates. And if
18 you're -- if you're looking at a rectal
19 thermometer that is -- and what we have done is,
20 we have actually placed them in such a way that we
21 can record rectal temperature over a period of
22 about a week.

1 And so when the animal defecates, the
2 rectal thermometer gets pulled out slightly.
3 That -- that could decrease that temperature
4 briefly, and then it goes back.

5 Q Does a cow's -- strike that.

6 The process of having its rectal
7 temperature taken can stress out a cow; right?

8 A Handling of an animal can -- can -- does
9 increase the -- the stress level of an animal.
10 But having a rectal -- it depends on how you
11 measure it. I'll just say that. It depends on
12 how you measure it. But the handling activity is
13 much more stressful than the taking of the
14 temperature.

15 Q And when you say "it depends on how you
16 measure it," what did you mean by that?

17 A So if you're using, like, a mercury
18 thermometer and putting it in the animal versus
19 over a long period of time, those two are -- are
20 different. It also depends on whether you're
21 talking about beef cattle or dairy cattle, because
22 dairy cattle are much more docile and used to

1 being around people. So a dairy animal, you could
2 walk up and take a rectal temperature on without
3 disturbing them, without -- without walking them
4 to a chute. You could just take it in the barn.

5 If you have a beef animal, you have to
6 take it to a squeeze chute. That -- that in
7 itself would stress the animal out. Just walking
8 up to a dairy animal would not -- would not stress
9 that animal and would not impact their body
10 temperature.

11 Q So to clarify, if an animal does have an
12 elevated stress level, that would impact its
13 temperature?

14 A Yes.

15 Q In what way?

16 A Well --

17 Q Strike that. Let me re-ask the question.

18 If an animal is -- strike that.

19 If an animal has an elevated stress level,
20 does that mean that its temperature generally
21 increases?

22 A I don't think you can make that

1 correlation exactly. So body temperature is
2 really a function of heat loss and heat
3 production. And we can go into all the different
4 modes of heat production.

5 But one of the -- the ways that -- that an
6 animal can produce heat is by -- by activity
7 level, hence the reason that you get an increase
8 in body temperature, because you have a big spike
9 of energy use, right, and you -- you -- the losses
10 take a little longer. So it is a balancing act
11 between heat production and heat loss.

12 So if the animal is stressed and that
13 causes their -- their increased muscle activity or
14 increased heart rate, that can increase their --
15 their body temperature, but it doesn't necessarily
16 have to.

17 Q So would it be fair to say that the amount
18 of stress that an animal's under can, but does not
19 necessarily, impact their sensed temperature?

20 A And I'm going to qualify that. It depends
21 on the type of stress; right? It depends on the
22 type of stress.

1 Q How many types of stress are there?

2 A Numerous stresses; right? Social stress,
3 heat stress, disease -- disease stress. There's
4 lots of different kinds of -- of stresses.

5 Q What would be the type of stress that an
6 animal would experience when being handled, such
7 as when their rectal temperature's being taken?

8 A So -- and -- and I'm going to qualify
9 that. It really depends on the animal, whether
10 they're stressed or not when you take a rectal
11 temperature.

12 So, like, a beef animal is -- is very
13 stressed, because now you've taken it away from
14 its -- its group. You've walked it in. You've
15 confined it. They aren't used to being handled,
16 so there's a lot of stress there.

17 And -- however, a dairy cow, you can walk
18 up, and you can take its body temperature as
19 it's -- as it's laying in what is called a free
20 stall. It's -- it's where they normally lay down
21 to rest. And that animal would not -- it probably
22 depends on the animal, but most animals would lay

1 there, let you -- let you take its rectal
2 temperature, let you scratch its back. It would
3 be -- it would not be stressed at all.

4 Q So would it be fair to say that some cows'
5 temperatures are impacted more than others by
6 stress?

7 A Yes. And it really -- it would really
8 have to do with how much they're handled, how much
9 they're around other people. So, once again,
10 dairy cows are -- are very docile animals. So
11 there are very few dairy cows that would be
12 stressed by that.

13 MR. HACKMAN: We're coming up on an hour.
14 If you need a break, let us know. If you're okay
15 to keep going, we can keep going for a little
16 while.

17 THE WITNESS: Actually, I'd like some
18 water.

19 MR. HACKMAN: Why don't we take, like, a
20 five-minute break.

21 MR. LANDERS: I'm good with that.

22 ///

1 (A recess was taken from 9:59 a.m.

2 to 10:12 a.m.)

3 MR. LANDERS: Back on the record.

4 THE WITNESS: Okay. I did look up
5 Courtney's last name, and it is Daigle. And I can
6 spell that for you. D-a-i-g-l-e.

7 Q (BY MR. LANDERS) Thank you.

8 And just for the record, did you and
9 counsel discuss the substance of any of your
10 testimony today over the break?

11 A We did not.

12 Q Okay. And before we took a break, we were
13 discussing temperature sensors, including rectal
14 temperature sensors.

15 Do you recall that?

16 A I do.

17 Q Okay. And just to follow up with one
18 thing, I asked about under-the-skin temperature
19 sensors.

20 Do you recall that?

21 A I do recall that.

22 Q And just to be clear, you have no

1 experience or expertise with under-the-skin
2 temperature sensors.

3 Is that fair to say?

4 MR. HACKMAN: Objection. Form.

5 A I do not have experience with those.

6 Q (BY MR. LANDERS) And you also do not have
7 expertise with under-the-skin temperature sensors?

8 MR. HACKMAN: Objection. Form.

9 A Is that a different question than you
10 asked previously?

11 Q (BY MR. LANDERS) I originally asked if
12 you have experience or expertise with
13 under-the-skin temperatures, and then your
14 response only included "experience."

15 A Oh.

16 Q Just to clarify. And I'll -- I'll have a
17 clean record here.

18 So just to be clear, you have no expertise
19 with under-the-skin temperature sensors; is that
20 correct?

21 MR. HACKMAN: Same objection.

22 A No, I do not have expertise in that.

1 Q (BY MR. LANDERS) And are you familiar
2 with any systems that use under-the-skin
3 temperature sensors?

4 A I am not familiar with any systems.

5 Q And you've never worked with any systems
6 that use under-the-skin temperature sensors?

7 A I have not.

8 Q And you're not aware of any particular
9 challenges that would come with the use of
10 under-the-skin temperature sensors in cattle?

11 MR. HACKMAN: Objection. Form.

12 A Most of the things we do in precision
13 animal management, we are really trying to
14 minimize the stress on the animals, minimize those
15 kind of things. So that isn't something we
16 would -- we would use because it would involve a
17 surgery. So that's not something that would be
18 easy for a producer to do.

19 Q (BY MR. LANDERS) From the perspective of
20 person of skill in the art, would you use an
21 under-the-skin temperature sensor to monitor a
22 cow's body temperature?

1 MR. HACKMAN: Objection. Form.

2 A It depends on how deep under the skin it
3 is. It would give you some -- it would be -- it
4 would give you some indication of body temperature
5 under the skin. It would also depend on where it
6 was located.

7 Q (BY MR. LANDERS) So to be clear, the
8 temperature measured by an under-the-skin
9 temperature sensor would depend on where the
10 sensor is located on the body of the
11 animal; right?

12 A On the body of the animal. That's right.

13 Q And the temperature that is sensed by the
14 sensor could be different on different part of the
15 body when using an under-the-skin sensor.

16 Is that fair to say?

17 A I don't have exact knowledge of that, but
18 I would be concerned and -- that it could chan --
19 it could change depending on where it is located.

20 Q And do you think a person of skill in the
21 art at the time of the invention would've had that
22 same concern?

1 A I do believe that, yes.

2 Q Can you think of any other concerns that a
3 POSA would have with an under-the-skin temperature
4 sensor?

5 A Other concerns that they would have
6 besides location, it would also -- they would also
7 be concerned -- at that time of migrating. So if
8 you put it in one place, it might not have stayed
9 in one place.

10 Q Are there any other concerns that you can
11 think of that a POSA would have with using an
12 under-the-skin sensor at the time of the
13 invention, for temperature?

14 A Besides migrating and where it was located
15 and the stress of installing it, no.

16 Q And, Dr. Brown-Brandl, does the -- does a
17 fluctuation of a cow's body temperature
18 necessarily indicate that a cow's ill?

19 A No.

20 Q Why not?

21 A Body temperature isn't a steady
22 temperature. It's a dynamic measure. The animal

1 has -- there are several things that are going on.
2 It's actually a very noisy signal. You have a
3 diurnal fluctuation in temperature. You have --
4 every time the animal is walking, you can have a
5 little spike in body temperature.

6 Yeah. I mean, if you look at it,
7 depending on how -- what your -- what your
8 frequency of measurements are, it can -- if
9 you're -- if you're taking it second by second,
10 you can actually see small little fluctuations in
11 body temperature.

12 So an increased body temperature doesn't
13 necessarily give you illness directly. If an
14 animal is heat-stressed, they will -- they will
15 have an increased body temperature.

16 Q So at the time of the invention, a POSA
17 would not have used temperature fluctuations to
18 identify an illness; is that correct?

19 MR. HACKMAN: Objection. Form.

20 A The -- they would've used body temperature
21 as one sign of illness.

22 Q (BY MR. LANDERS) And at the time of the

1 invention, the POSA would've understood that
2 sensed temperature could be affected by
3 environmental conditions, time of day, the cow
4 being in heat; right?

5 MR. HACKMAN: Objection to form.

6 A Can you repeat that question.

7 Q (BY MR. LANDERS) Yeah.

8 At the time of the invention, the POSA
9 would've understood that sensed temperature could
10 be affected by environmental conditions, time of
11 day, or the cow being in heat rather than
12 illness; right?

13 A Yes. They would've understood that
14 there's a lot of -- a lot of things that impact
15 elevated body temperature.

16 Q Other than environmental conditions, time
17 of day, or the cow being in heat, what are some
18 other things that would impact a cow's elevated
19 body temperature?

20 MR. HACKMAN: Objection. Form.

21 A As we talked about earlier, the -- the act
22 of -- of moving, the muscle activity.

1 Q (BY MR. LANDERS) Anything else?

2 A I'm -- I'm sure there are other things.

3 Those are the -- the main things that we are
4 concerned about.

5 Q And if a cow is experiencing heat stress,
6 their body temperature would be elevated; correct?

7 A Their body temperature can be elevated.
8 It doesn't necessarily have to be elevated.

9 Q Is there a way to determine whether heat
10 stress will elevate a cow's body temperature?

11 A Well, if you -- if -- it all goes back to
12 that heat production and heat loss. So it depends
13 on the environment they're in. So the solar
14 radiation, the wind speed, the temperature, the
15 humidity, and those all impact heat loss
16 functions. It -- can you repeat the question,
17 make sure I'm answering it completely.

18 Q Right.

19 So I'm going back to your testimony that
20 you said that with respect to heat stress, a cow's
21 body temperature can be elevated. It doesn't
22 necessarily have to be elevated.

1 And my question was whether there's a way
2 to determine, for a particular cow, whether heat
3 stress would indeed elevate a cow's body
4 temperature.

5 A Oh, yeah. No, it's -- it's really -- it's
6 animal-to-animal dependent. It depends on -- it
7 really depends on that -- that temperature or that
8 heat loss and heat production function.

9 And if you -- if -- if the -- it depends
10 on the environmental conditions, like I said. It
11 depends on the level of those environmental
12 conditions. It depends on the animal's history.
13 It depends on what they ate. It depends on their
14 activity level. It's -- it's a complicated
15 factor.

16 Q And just to be clear, a cow's temperature
17 fluctuation can depend on what the cow ate?

18 A Yes. They're -- yeah. What they ate and
19 how much they ate, when they ate.

20 Q And do the same factors that you just
21 mentioned that can impact a cow's temperature, can
22 those same factors also impact a cow's milk

1 production?

2 A Yes, all of those same factors in a
3 different -- in a different sort of way. The milk
4 production is also related to heat production. So
5 in certain circumstances, the animal will decrease
6 its -- its heat production by decreasing milk
7 production.

8 It also depends on -- when you get into
9 milk production, it's -- it's a little bit -- it
10 can be a little bit more complicated, because you
11 have genetic factors, and you have water intake,
12 and you have days of milk, and you have -- yeah.
13 It -- it's more complicated or it -- there are
14 different things that impact milk production
15 beyond just environmental feed intake.

16 Q Just to be clear, there are some factors
17 that can -- strike that.

18 Is it accurate to say that there are some
19 factors other than illness that can increase a
20 cow's temperature and also cause a decrease in a
21 cow's milk production?

22 MR. HACKMAN: Objection. Form.

1 A Are there -- so I'm going to repeat the
2 question and make sure I understand it.

3 Are there factors that -- that impact both
4 increases in -- in temperature and decreases in
5 milk production? Am I understanding your question
6 right?

7 Q (BY MR. LANDERS) Yes.

8 A Are there similar factors that do that?
9 Yes.

10 Q Let me re-ask the question, then.

11 A Okay.

12 Q If you don't have an understanding of
13 it -- just for a clear record, because then it's
14 going to look like you asked yourself a question.

15 Is it accurate to say that there are some
16 factors, other than illness, that can increase a
17 cow's temperature and also cause a decrease in a
18 cow's milk production?

19 MR. HACKMAN: Objection. Form.

20 A It depends on the time frame we're talking
21 about. I would say that if we're talking about a
22 short time frame and you had a increase in

1 temperature and a decrease in milk production,
2 that would be -- that could be indications that
3 that animal needs to be checked for illness.

4 MR. LANDERS: I'm going to object as
5 nonresponsive.

6 Q (BY MR. LANDERS) My question was whether
7 there are some factors, other than illness, that
8 can increase a cow's temperature and also cause a
9 decrease in a cow's milk production.

10 MR. HACKMAN: Objection. Form.

11 A Potentially, heat stress could cause an
12 increase in body temperature and a decrease in
13 milk production.

14 Q (BY MR. LANDERS) Are there any other
15 factors, other than heat stress, that could cause
16 an increase in body temperature and a decrease in
17 milk production?

18 A There may be, but if you saw an increase
19 in -- in body temperature, a decrease in milk, you
20 could look to other factors, such as temperature
21 and environmental temperature and -- and if -- it
22 still may be signs that you need to go check that

1 animal for illness.

2 Q Earlier you said that a cow's temperature
3 fluctuation can depend on what the cow ate; right?

4 A Yes.

5 Q How does what the cow ate impact a cow's
6 temperature fluctuation?

7 A So it goes back to the -- really looking
8 at that heat production versus heat loss balancing
9 act. And if the cow is eating -- depending on
10 what they are fed, if it's a high-grain diet, it
11 can -- it -- the breakdown of that, the amount of
12 feed, the amount of energy that they intake, and
13 the -- the digestion of that and the breakdown of
14 that can cause changes in body temperature,
15 because they're -- it -- it's creating heat. And
16 the animal has to dissipate all of the heat that
17 they -- they are generating. So that's how it
18 would.

19 Q You mentioned "the amount of feed."

20 So to clarify, both the amount of feed and
21 the quality of feed can impact a cow's
22 temperature; right?

1 A I wouldn't say quality. I would say type.
2 So if it's a high-forage diet versus a
3 higher-grain diet, that would impact the -- but
4 the quality would not necessarily.

5 Q Is it fair to say that both the amount of
6 feed and the type of feed can impact a cow's
7 temperature?

8 A Yes, it can.

9 Q And is it fair to say that both the amount
10 of feed and the type of feed can impact a cow's
11 milk production?

12 MR. HACKMAN: Objection. Form.

13 A Yeah. Like I said, milk production is --
14 is very complicated. So just giving an animal
15 less feed or more feed or types of feed isn't --
16 isn't necessarily going to impact -- if you're
17 meeting all the nutrient requirements isn't
18 necessarily going to impact milk production,
19 because it really depends on genetics and a lot of
20 different things. So as long as the nutrient
21 requirements are -- are satisfied, then the milk
22 production wouldn't necessarily be impacted.

1 Q (BY MR. LANDERS) So is it inaccurate to
2 say that decreases in milk production could be
3 caused by the quality or amount of feed that a cow
4 has been provided?

5 MR. HACKMAN: Objection. Form.

6 A So I'll go back to, it depends on the
7 nutrient requirements of the animal. If you are
8 meeting the nutrient requirements of the animal,
9 it shouldn't have a large impact on milk
10 production.

11 Q (BY MR. LANDERS) So do you disagree with
12 the statement that decreases in milk production
13 could be caused by the quality or amount of feed
14 that a cow has been provided?

15 MR. HACKMAN: Objection. Form.

16 A I still go back to, it depends on the
17 nutrient requirements of the feed. You have to
18 meet the nutrient requirements of the animal.

19 Q (BY MR. LANDERS) Dr. Brown-Brandl, are
20 you familiar with any livestock management
21 software programs?

22 A I am familiar with them. I -- yeah, I am

1 familiar with some. I don't have an exhaustive
2 knowledge of all the different softwares that are
3 available. There are a lot.

4 Q Could you give me a few examples of
5 livestock management software that you're familiar
6 with.

7 A Well, I -- I don't have specific names. I
8 know -- I know Lely has one out. I'm sure DeLaval
9 has one that's out. We created a management
10 software for -- for swine production, not for
11 dairy production. But as specific names and
12 what -- what exactly they record, I -- I don't
13 have a vast knowledge of that.

14 Q Do you have expertise in any livestock
15 management software programs?

16 MR. HACKMAN: Objection. Form.

17 A I have -- I have not. Just the ones we
18 have developed, but I -- I haven't used one that a
19 producer has used.

20 Q (BY MR. LANDERS) So you've never used a
21 livestock management software program that a
22 producer has produced?

1 MR. HACKMAN: Objection. Form. Outside
2 the scope.

3 A I -- I have not. Yeah. Those -- we -- we
4 might've discussed them in my -- in my lab group
5 meeting or at -- at meetings, but I have not used
6 them, no.

7 Q (BY MR. LANDERS) Are you aware of any
8 livestock management software that includes a log
9 of the treatments that have been provided to the
10 animals?

11 MR. HACKMAN: Objection to form.

12 A Well, that would be a normal thing. When
13 I worked at the Meat Animal Research Center,
14 every -- every animal -- that went in our
15 database. Every single time an animal was
16 treated, every time the animal was looked at, the
17 day of treatment, the medication of treatment, the
18 location of that animal was all -- went all in
19 that database.

20 That was very -- that is a very important
21 thing for -- to track for all animals, all -- for
22 all, especially livestock and meat-producing or

1 product-producing animals, such as dairy or beef
2 or pigs.

3 Q (BY MR. LANDERS) So, typically, a
4 livestock management software will keep a log of
5 the treatments provided to the animals; right?

6 A Yes.

7 Q And, for example, for a particular cow,
8 the livestock management software that you're
9 aware of would keep a log of past dates when it
10 received a certain medication?

11 MR. HACKMAN: Objection. Form.

12 A It is -- it is vital that -- that
13 producers know what the animal was treated with,
14 when they were treated. That -- that is vital
15 information. For dairy, it has -- they have to
16 hold the milk. And so it's vital to know which
17 animals were treated and when they were treated so
18 they know the withdrawal period.

19 Same with meat animals, you have to know
20 when they were treated and what they were treated
21 with so you know the withdrawal -- the withdrawal
22 period before they're sent to -- to slaughter.

1 Q (BY MR. LANDERS) When you refer to
2 "withdrawal period," do you mean that when a cow
3 is provided with a certain medication, the milking
4 of that cow will stop?

5 A No. The milking has to continue, but the
6 milk is not put in the bulk tank. It is not --
7 it's not sent for human consumption.

8 Q Okay. So when you refer to "withdrawal
9 period," you're referring to the fact that when a
10 cow is provided with certain medication, its milk
11 will not be used for production?

12 A It will not go to human consumption.

13 Q If a cow is identified as ill, would it be
14 withdrawn?

15 A It depends on if it was treated and what
16 it was treated with.

17 Q So in certain cases, if a cow is
18 identified as ill, it would be withdrawn,
19 depending on the treatment it was given?

20 MR. HACKMAN: Objection. Form.

21 A If a cow was treated with certain
22 medications, that milk would -- the milk would not

1 go in the bulk tank and would not go to human
2 consumption.

3 Q (BY MR. LANDERS) And is a cow treated
4 with certain medications depending on the
5 particular illness that it was diagnosed with?

6 A I'm not a veterinarian, and that is
7 outside of my expertise.

8 Q So you have no experience or expertise
9 regarding the reasons why a particular animal
10 would be given certain medications.

11 Is that fair to say?

12 A That is --

13 MR. HACKMAN: Objection. Form. Outside
14 the scope.

15 A Yeah. Particular treatments for
16 particular diseases or illnesses would need to
17 be -- it would have to be consulted with a
18 veterinarian. So I would hate to go on the record
19 saying what treatment goes to what illness.

20 Q (BY MR. LANDERS) So because you're not a
21 veterinarian, you would hate to go on the record
22 saying what treatments would be provided to a

1 particular cow and why that treatment would be
2 provided?

3 A Yeah, it's out- --

4 MR. HACKMAN: Objection. Form.

5 A It's outside of my knowledge base.

6 Q (BY MR. LANDERS) And just to be clear,
7 you have no experience determining which
8 medications should be provided to animals and why
9 those medications would be given?

10 MR. HACKMAN: Objection. Outside the
11 scope.

12 A No, I -- I am an agricultural engineer.
13 I've had education in physiology, designing
14 systems, but treatment of animals is outside of my
15 expertise.

16 Q (BY MR. LANDERS) In your opinion, is
17 determining whether -- strike that.

18 So we were talking earlier about software
19 programs for livestock management.

20 Do you recall that?

21 A Yep. Yes.

22 Q And we discussed how some of the software

1 programs that you're familiar with would log an
2 animal's treatment; right?

3 A Yes.

4 Q Now, as far as you know, did the livestock
5 management software that you're aware of use the
6 information in the treatment log in a formula to
7 determine whether the cow had a particular
8 illness?

9 MR. HACKMAN: Objection. Form. Outside
10 the scope.

11 A You know, I'm not familiar with exactly
12 the details of the -- the software.

13 Q (BY MR. LANDERS) Are you aware of any
14 livestock management software that uses
15 information from a treatment log to determine
16 whether a cow is ill?

17 MR. HACKMAN: Objection. Form. Outside
18 the scope.

19 A That, I don't know.

20 Q (BY MR. LANDERS) Are you aware of any
21 livestock management software that uses
22 information from a treatment log in any formula?

1 MR. HACKMAN: Objection. Form.

2 A The -- like we talked about earlier, the
3 only -- the only thing I am aware of is a
4 treatment log would be used to know if the -- if
5 the milk can go to human consumption.

6 Q (BY MR. LANDERS) And that would be
7 determined by the user reading the treatment log?

8 MR. HACKMAN: Objection. Form.

9 A If the management software is logging --
10 is logging when the animal was treated and what it
11 was treated with, it could easily be in the
12 management software to then flag those animals for
13 a certain number of days.

14 So that seems logical and -- and obvious
15 that they would do that. I am not aware of
16 specific equations and how that's calculated.

17 Q (BY MR. LANDERS) But, specifically,
18 you're not aware of any livestock management
19 software that uses information from the treatment
20 log to indicate illness; right?

21 MR. HACKMAN: Objection to form. Outside
22 the scope.

1 A I am not.

2 Q (BY MR. LANDERS) Are you aware of whether
3 a milk sample from a dairy cow can be tested in a
4 laboratory to determine whether the cow has a
5 particular illness?

6 A Like I said, I'm -- that isn't my -- my
7 strong -- I -- that isn't exactly what I do. I
8 know that they can take samples and analyze them
9 for various things.

10 Q But you're not aware of specific illnesses
11 that could be determined based on testing a cow's
12 milk?

13 A I -- I am not. Well, let me go back. So
14 looking at mastitis, they look at several
15 different factors in -- in milk. And one of them
16 is, I know they look at color, they look at
17 somatic cell count, and they look at -- and they
18 look at conductivity of the milk. And that gives
19 them an indication of mastitis.

20 Q And do you know how long that process
21 takes of testing milk to determine whether a cow
22 has mastitis?

1 MR. HACKMAN: Objection. Form. Outside
2 the scope.

3 A I -- I don't know exactly. I know that
4 some of those sensors are -- can be in the -- the
5 lines in -- in automatic milking machines. So I
6 would say it's rather quick, but the exact time, I
7 don't know.

8 Q (BY MR. LANDERS) You mentioned
9 "conductivity of the milk."

10 Do you recall that?

11 A Yes.

12 Q Is milk conductivity a measure of milk
13 production?

14 A I -- I don't think so.

15 Q So milk conductivity and milk production
16 are two different variables?

17 A That isn't necessarily my strong suit.
18 I'm -- so I -- I can't definitively say that
19 that's not -- they aren't related.

20 Q Sitting here today, you don't know whether
21 milk conductivity and milk production are related.

22 Is that fair to say?

1 MR. HACKMAN: Objection to form. Outside
2 the scope.

3 A The conductivity is measured to look for
4 mastitis. Could conductivity also be impacted by
5 the amount of milk that an animal's produced?
6 Possibly, but I -- I am -- would hate -- I don't
7 know. I -- I'm not sure that that is an exact
8 correlation.

9 Q (BY MR. LANDERS) You don't know and
10 you're not sure whether there's a correlation
11 between milk conductivity and milk production.

12 Is that fair to say?

13 MR. HACKMAN: Objection to form. Outside
14 the scope.

15 A I know that conductivity would increase if
16 the animal has -- has mastitis. Whether or not
17 there could be fluctuations in that conductivity
18 based on the amount of milk the animal is
19 producing, I am -- I am not sure.

20 Q (BY MR. LANDERS) And a deviation from a
21 cow's usual milk production does not necessarily
22 indicate that that cow is ill; correct?

1 A A deviation in milk production alone could
2 be caused by a lot of factors.

3 Q Sitting here today, what are the factors
4 that you're aware of, other than illness, that
5 could cause a deviation in a cow's usual milk
6 production?

7 A Like we discussed before, deviations in
8 milk production could be caused by -- by heat
9 stress, a decrease in water intake. I mean, milk
10 production alone can mean changes over the
11 lactation period, stress level. And there might
12 be other factors that I'm -- that I'm not thinking
13 of right now. But, I mean...

14 Q Can the reproductive status of the cow
15 impact milk production?

16 A That, I -- I am unsure of.

17 Q Can weather impact a cow's milk
18 production?

19 A Like I stated earlier, heat stress can
20 impact an animal's heat production -- or heat
21 production -- I mean milk production, yes.

22 Q And based on that response, is it fair to

1 say that there's a correlation between weather and
2 heat stress?

3 A There is definitely a correlation between
4 weather and heat stress.

5 Q And what is that correlation?

6 A As we discussed earlier, there are several
7 factors that impact heat stress; that is,
8 temperature, humidity, solar radiation, or the
9 temperature of the surroundings, and wind speed.

10 Q And, therefore, all of those factors
11 impact milk production; right?

12 A The combination of those factors and --
13 and -- the combination of the factors in the
14 building or surrounding the animal would impact
15 milk production, yes, and heat stress.

16 Q And those same factors could impact a
17 cow's sensed temperature; right?

18 A All of those factors would impact the deep
19 body temperature.

20 Q Are you aware of whether milk fever causes
21 a loss in milk production?

22 MR. HACKMAN: Objection. Form. Outside

1 the scope.

2 A I -- I am not.

3 Q (BY MR. LANDERS) Are you aware of the
4 impact that acidosis, ketosis, or metritis has on
5 milk production?

6 MR. HACKMAN: Objection. Form. Outside
7 the scope.

8 A Those are -- those are things I have not
9 studied. I do not know.

10 Q (BY MR. LANDERS) In your experience, do
11 persons of skill ever use the temperature of milk
12 as opposed to the cow's body temperature to assess
13 whether a cow is either in heat or ill?

14 MR. HACKMAN: Objection. Form.

15 A The -- the temperature of the milk at the
16 time it exits the body would -- would be the body
17 temperature of the animal.

18 Q (BY MR. LANDERS) Can the temperature of
19 the milk vary depending on the teat of the cow
20 where it is measured?

21 MR. HACKMAN: Objection. Form.

22 A The -- the temperature of the milk exiting

1 the teat comes from the surrounding tissue, so it
2 would -- it is the temp- -- it's the body
3 temperature of the animal.

4 Q (BY MR. LANDERS) Are you aware of any
5 illnesses where the conductivity of the milk can
6 indicate illness, but a cow's body temperature
7 would not indicate illness?

8 MR. HACKMAN: Objection. Form.

9 A This is a little outside of my expertise.
10 So depending on -- I -- I would think that
11 depending on the level of mastitis, you could get
12 a change in conductivity without an increase in
13 body temperature, but I'm really not an expert in
14 this field.

15 Q (BY MR. LANDERS) In your work -- strike
16 that.

17 Are you familiar with the concept of the
18 fistulated animal?

19 A I am.

20 Q And is it true that an animal can only be
21 fistulated in a testing or research environment?

22 MR. HACKMAN: Objection. Form. Outside

1 the scope.

2 A I would say that isn't exactly true. A
3 fistulated animal is generally used for -- for
4 research.

5 Q (BY MR. LANDERS) So it's accurate to say
6 that a fistulated animal is generally used for
7 research and not production; right?

8 A That is a true statement.

9 MR. HACKMAN: Objection. Form. And
10 outside the scope.

11 Q (BY MR. LANDERS) And a fistulated animal
12 would generally not be used for practical
13 applications; right?

14 MR. HACKMAN: Objection. Form. Outside
15 the scope.

16 A A fistulated animal is generally used
17 for -- for research.

18 Q (BY MR. LANDERS) And a fistulated animal
19 is generally not used for practical
20 application; right?

21 MR. HACKMAN: Objection. Form. Outside
22 the scope.

1 A A fistulated animal is not generally used
2 for production.

3 Q (BY MR. LANDERS) I'm going to look at
4 your '206 declaration. And if you could turn to
5 page 12. Just let me know when you're there.

6 A Okay. I am here.

7 Q We discussed some of this previously, but
8 do you see your discussion of search engines, such
9 as Google, Google Scholar, Yahoo, PubMed, and
10 Scopus?

11 A Yes.

12 Q And specifically, do you know the process
13 by which Google indexes documents when they're
14 made available on a website?

15 A I am not a -- an expert in this. My
16 understanding is, when Google looks at the date at
17 which the page was last -- last updated for its
18 indexing of dates.

19 Q But you're not an expert in this
20 field; right?

21 A That I am not, no.

22 Q And are you aware that there's another

1 expert in this case named Dr. Tim Bowser?

2 A I am aware.

3 Q Had you heard of him before this case?

4 A I have not.

5 Q But you're aware that he has submitted
6 opinions in this case?

7 A I have.

8 Q Have you reviewed his declaration?

9 A I reviewed his declaration for the
10 '515 patent.

11 Q And did you review Dr. Bowser's
12 declaration for the '206 patent?

13 A I did not.

14 Q And I think we mentioned this reference
15 earlier, but you're familiar with the reference
16 that you identified known as Trevarthen?

17 A Trevarthen, yes.

18 Q Trevarthen.

19 And are you aware that Dr. Bowser has
20 provided an opinion that the petitioners, smaXtec,
21 did not show that Trevarthen was publicly
22 accessible as of the invention date for the '206

1 and '515 patents?

2 A I --

3 MR. HACKMAN: Objection. Form.

4 A I read his opinion in his declaration.

5 Q (BY MR. LANDERS) And that includes the
6 opinion regarding the public accessibility of
7 Trevarthen?

8 A Yes, I read his opinion on that.

9 Q And are you aware that smaXtec has argued
10 that Dr. Bowser lacks the requisite scientific,
11 technical, or other specialized knowledge to
12 assess the public accessibility of documents?

13 A I reviewed his document. I didn't -- I
14 didn't review his expertise on that area.

15 Q Do you believe Dr. Bowser is qualified to
16 assess the public accessibility of Trevarthen?

17 MR. HACKMAN: Objection. Form. Outside
18 the scope.

19 A I read his opinion, but I don't know
20 his -- his qualifications completely.

21 Q (BY MR. LANDERS) And so you also wouldn't
22 know whether Dr. Bowser's qualified to assess the

1 public accessibility of a document based on search
2 engine searches?

3 MR. HACKMAN: Objection. Form. Outside
4 the scope.

5 A According to his declaration, his
6 background seems more academic than library
7 science.

8 MR. LANDERS: I'll object as
9 nonresponsive.

10 Q (BY MR. LANDERS) My question was whether
11 you had an opinion on whether Dr. Bowser was
12 qualified to assess the public accessibility of a
13 document based on search engine searches.

14 MR. HACKMAN: And same objections.

15 A So my response is similar. When I read
16 his declaration and I read his background, and in
17 his background, it seems to me that he has more of
18 a scientific background, and I did not see in his
19 declaration any library science background that
20 would make him an expert in that area.

21 Q (BY MR. LANDERS) And is it your opinion
22 that you would need a library science background

1 to make someone an expert in that area?

2 MR. HACKMAN: Objection. Form. Outside
3 the scope.

4 A I think to truly understand how all of
5 those things work, you need -- you need some
6 background in that.

7 Q (BY MR. LANDERS) And to be clear, you
8 don't have a library science background.

9 Is that fair to say?

10 A That is fair to say.

11 MR. HACKMAN: About through another hour.
12 If you want to continue, if you're close to
13 finishing this line of questions, we can take a
14 break after or if this is a good time.

15 MR. LANDERS: Sure. We can wrap -- I can
16 I can come to a stopping point and let you know.

17 MR. HACKMAN: Okay. We can just take
18 five, ten minutes? Oh, sorry. You mean to
19 take -- go ahead and let me know when you're --

20 MR. LANDERS: Will do. Will do.

21 Q (BY MR. LANDERS) Okay. With respect to
22 Trevarthen, Dr. Brown-Brandl, are you aware that

1 that was a thesis paper submitted to the
2 University of Wollongong?

3 A I am.

4 Q And are you aware of something called
5 Research Online affiliated with the University of
6 Wollongong?

7 A I am not familiar with that.

8 Q So you're not familiar with Research
9 Online associated with the University of
10 Wollongong?

11 A I am -- I am not.

12 Q Are you aware that when the University of
13 Wollongong makes a document available to a public
14 search engine, the university does not actually
15 submit that article to the search engine?

16 MR. HACKMAN: Objection. Form. Outside
17 the scope.

18 A That is -- that is something that I -- I
19 don't know how -- how all of that works.

20 Q (BY MR. LANDERS) So you don't know
21 whether the University of Wollongong actually
22 submits the article to a search engine, such as

1 Google?

2 A No. We have a similar -- a similar place
3 we put them online at the University of Nebraska.
4 I do not know how -- how they get put on a search
5 engine.

6 Q And you don't know if they get put on the
7 search engine; right?

8 MR. HACKMAN: Objection. Form. Outside
9 the scope.

10 A I know that I have had undergraduate
11 thesis papers or for my senior design class that
12 we have put on the university -- university online
13 system, and those do show up in a search engine.

14 Q (BY MR. LANDERS) Are you aware that when
15 the University of Wollongong makes a document
16 available to a public search engine, it's simply
17 allowing a search engine such as Google to index
18 the Web page containing the document?

19 MR. HACKMAN: Objection. Form. Outside
20 the scope.

21 A Can you repeat the question. I'm not sure
22 I understand it.

1 Q (BY MR. LANDERS) Yeah.

2 Do you have any idea what Google's policy
3 is for deciding when and how to index a Web page?

4 MR. HACKMAN: Objection. Form. Outside
5 the scope.

6 A I do not know how Google operates.

7 Q (BY MR. LANDERS) And are you familiar
8 with the term "crawling" in the context of search
9 engines?

10 MR. HACKMAN: Objection. Form. Outside
11 the scope.

12 A I do not know.

13 Q (BY MR. LANDERS) So you wouldn't know any
14 particular search engine's policy for when and how
15 to crawl a website for identifying Web pages?

16 MR. HACKMAN: Objection. Form. Outside
17 the scope.

18 A I -- I do not.

19 Q (BY MR. LANDERS) Do you know Google's
20 policy for when and how it crawls a website for
21 identifying Web pages?

22 MR. HACKMAN: Objection. Form. Outside

1 the scope.

2 A I don't know exactly Google's policy.

3 I -- I know that sometimes they -- they look at
4 the last date that the -- the page was updated,
5 but I don't know their exact policy.

6 MR. LANDERS: I'll object as
7 nonresponsive.

8 Q (BY MR. LANDERS) I'm asking whether you
9 know Google's policy for crawling a Web page.

10 MR. HACKMAN: Objection. Form. Outside
11 the scope.

12 A I don't know Google's policies.

13 MR. LANDERS: Okay. We can take that
14 break.

15 (A recess was taken from 11:08 a.m.
16 to 11:17 a.m.)

17 MR. LANDERS: We can go back on the
18 record.

19 Q (BY MR. LANDERS) Welcome back,
20 Dr. Brown-Brandl. I've asked the court reporter
21 to hand you what's already been marked in these
22 proceedings as 1005.

1 And could you just please confirm that
2 Exhibit 1005 is the document we've been referring
3 to as Trevarthen today?

4 A Yep.

5 Q Or Trevarthen?

6 A Trevarthen. Yep.

7 Q And Trevarthen is an undergraduate thesis
8 from the University of Wollongong; is that
9 correct?

10 A That is correct.

11 Q If you could flip to page 2 of the
12 exhibit, so really the back side of the very first
13 page.

14 Are you looking at Exhibit 1005, page 2?

15 A Yes.

16 Q And I'm asking about the first sentence
17 under the word "abstract," where it says,
18 (as read) The introduction of the National
19 Livestock Identification System (NLIS) within
20 Australia empowers authorities with rapid and
21 precise information.

22 Do you see that?

1 A I do.

2 Q Do you know what the NLIS is?

3 A I remember this point in history and why
4 this was becoming -- why this was important.
5 This, to me, is exactly the Australian way of
6 tracking livestock.

7 Q And my first question on that is: Do you
8 know when the NLIS was implemented?

9 A I don't know precisely. I know the
10 history of when all of that took place and why --
11 why that took place.

12 Q So when you say "history of when all that
13 took place," can you -- just for timeline
14 purposes -- give me your approximation of when the
15 NLIS was implemented?

16 A So it might've occurred before this, but I
17 know that there was a really strong push to -- to
18 identify animals and to track animals' age around
19 the 2003 -- 2000 -- 2003 timeline because of the
20 mad cow disease. And they were finding out that
21 the age of the animal was vital in knowing whether
22 the animal would have that disease or not.

1 Q And just to clarify, finding out the age
2 of an animal was the reason the NLIS was
3 implemented?

4 A I don't know. I know that there was a
5 huge -- there was a huge push worldwide to track
6 animals' age and where they were located at during
7 that 2003 time frame because of the mad cow
8 disease.

9 And their -- Asia, at that time, was
10 shutting down markets for meat that's coming from
11 countries -- they had to be able to verify age of
12 the animal. And that was about the 2003 time
13 frame.

14 And I know about that time Australia made
15 it mandatory that animals going to slaughter,
16 which would include dairy cows, were -- were
17 tagged, and at that time, they would -- they were
18 really promoting RFID. And I believe Australia
19 was saying, if an animal shows up at the slaughter
20 plant without an RFID, the producer had to pay \$20
21 for the tag to get put in, something like that.
22 So it was -- it was in their best interest to tag

1 and log those animals.

2 Q And so would it be fair to say that one of
3 the purposes of the NLIS was to prevent the spread
4 of mad cow disease?

5 A What -- mad cow disease doesn't
6 necessarily transfer from animal to animal. It
7 has to do with the feeding of -- of animal
8 products back to animals. But mad cow disease
9 doesn't necess- -- doesn't show up. It takes a
10 long time for it to show up in animals.

11 And so they found that -- and I think it
12 was about 30 months of age. So if an animal's
13 less than 30 months of age, they were deemed safe
14 to consume.

15 Q So the implementation of the NLIS was more
16 about tracking the source of the animal because
17 the meat wasn't safe to consume --

18 MR. HACKMAN: Objection. Form.

19 MR. LANDERS: I wasn't finished, but I
20 was -- I lost my place, so I...

21 Q (BY MR. LANDERS) So the purpose of the
22 NLIS was to track the source of an animal because,

1 for example, the meat wasn't safe to consume?

2 MR. HACKMAN: Objection. Form.

3 A I don't think that's completely right.
4 They might've had other -- they might've had other
5 purposes as well, but I know that they were
6 tagging animals because they needed to know mostly
7 the age of the animal.

8 But they also were tracking location. And
9 that was for the Asian market. A lot -- I mean,
10 it was for everybody, but I know that Asia had
11 shut down importing of -- of meat from countries
12 that were not tracking the age of the animal.

13 Q (BY MR. LANDERS) So the main purpose of
14 the NLIS was to track animals because the
15 authorities needed to know the age of the animal,
16 as well as tracking its location to rule out
17 whether they had mad cow disease?

18 A Like I said, the NLIS might've had
19 other -- other objectives, but I know at that
20 point in history, that was one very important
21 reason to tag animals.

22 Q So I think you mentioned that mad cow

1 disease does not necessarily transfer from one cow
2 to the other; is that accurate?

3 A Yes, that is, in my -- in my knowledge,
4 that is accurate.

5 Q So one way to put it would be that mad cow
6 disease is not contagious?

7 A I believe that is true.

8 Q So detecting that one animal has mad cow
9 disease -- strike that.

10 Is it fair to say that detecting whether
11 one cow has mad cow disease would not help stop
12 the spread of mad cow disease?

13 MR. HACKMAN: Objection. Form.

14 A From my understanding, mad cow disease
15 is -- is -- an animal gets mad cow disease from
16 eating products from a cow -- from an animal that
17 has -- that -- it's a prion disease, and so it's
18 consuming those prions.

19 Q (BY MR. LANDERS) okay. Do you see in
20 that first sentence on page 2 of Exhibit 1005
21 where it says, (as read) However, it also provides
22 Australian farmers?

1 A Yes.

2 Q Specifically, Trevarthen says, (as read)
3 The NLIS also provides Australian farmers with the
4 opportunity to derive additional benefits for
5 themselves.

6 Do you see that?

7 A Yes.

8 Q And what's your understanding of what
9 Trevarthen means by "additional benefits"?

10 A So we -- in -- in my lab, we were also
11 talking about this as well. If -- if a producer
12 has to put an RFID tag in the ear of the animal,
13 it, at that time, was costing them about \$3. And
14 if they -- if they only put the tag in the ear
15 and -- it would cost them \$3 without providing
16 them any benefit.

17 However, if we could come up with
18 systems -- and this is what Trevarthen is talking
19 about. But we were -- we weren't talking about
20 the same thing. If they're already incurring the
21 cost of a \$3 tag, what other -- what other ways
22 could we utilize that tag to provide information

1 from that -- from the animals to help the -- help
2 the producer manage those animals?

3 Q And so when Trevarthen says "additional
4 benefits," what does he mean by "additional"? In
5 addition to what?

6 A He -- well, in addition to just putting
7 that tag in the ear. The tag in the ear doesn't
8 really provide any benefit to the producer unless
9 they're utilizing it throughout their entire
10 system. So Trevarthen is -- is then saying, well,
11 if we have this RFID, we can identify individual
12 animals; what information can we glean from that
13 animal?

14 Q And my question is, going back to your
15 testimony that the tag on the ear didn't really
16 provide any benefit to the producer, but
17 Trevarthen uses the word "additional," so I'm
18 trying to figure out what the other benefits are.

19 A So -- well -- so the tag in the ear is
20 just a tag in the ear. But if you can -- if you
21 can use that in an entire system and -- I mean, we
22 can go into what Trevarthen does exactly. But if

1 you think about it globally, they can be -- that
2 tag can help the producer capture information on
3 that individual animal.

4 Can -- I mean, with regard to, like, milk
5 production or feed -- feeding behavior, feed
6 intake. It can help them record information of --
7 of weights or condition scores. It -- it is -- an
8 RFID tag in itself is just a number, but it is an
9 electronic method of capturing that number that
10 allows you to add other things to it, so it
11 becomes much easier and less error-prone to
12 collect individual animal data.

13 Q Right.

14 MR. LANDERS: And I'm going to have to
15 object as nonresponsive because my question was
16 asking something a little bit different.

17 A Okay.

18 Q (BY MR. LANDERS) I think you were going
19 into some detail about the benefits to the
20 producer of the farmer; right?

21 And what I'm asking is: When Trevarthen
22 uses the word "additional," that assumes that

1 there's other benefits before he gets to the
2 producer. So perhaps benefits to Australia, like
3 why they implemented NLIS in the first place. So
4 when you use the word "additional," you're
5 assuming that there was some previous benefit.

6 In addition to what?

7 A Oh. So --

8 Q Does that make sense?

9 A Yeah. So --

10 Q Okay. Let me try to reframe the question.
11 I just wanted to clarify what I'm getting at, and
12 then I'll ask the question.

13 So, Dr. Brown-Brandl, do you see where
14 Trevarthen says, (as read) Provides Australian
15 farmers with the opportunity to derive additional
16 benefits for themselves?

17 A I do.

18 Q And my question is: When Trevarthen uses
19 the word "additional," what other benefits is he
20 referring to, other than the ones to the producer
21 for themselves?

22 MR. HACKMAN: Objection. Form.

1 A So I'll go back to the reason -- one of
2 the reasons that they had to use RFID is to open
3 those meat markets to -- to Asia. So at that
4 time, an animal couldn't be brought to -- it
5 couldn't be brought to slaughter without an RFID
6 tag without suffering a penalty.

7 So the -- the -- the reason that they
8 wanted RFID tags in the animal is to document the
9 age of the animal for -- mostly for that Asian
10 food market, those exports, that export market.

11 Q (BY MR. LANDERS) And, to your knowledge,
12 did that RFID tag that was minimally required by
13 the NLS work for its intended purposes?

14 MR. HACKMAN: Objection. Form. Outside
15 the scope.

16 A From my experience in talking to a
17 colleague who was -- who is in Australia, yes,
18 that was -- that was working.

19 Q (BY MR. LANDERS) And what exactly was it
20 working for?

21 MR. HACKMAN: Objection. Form. Outside
22 the scope.

1 A I'll go back to my previous statement,
2 that it was -- it was for tagging those animals so
3 they knew the location of the animal, they knew
4 the -- the age of the animal, so they could be
5 marketed for that export market to Asia.

6 Q (BY MR. LANDERS) Okay. I'm still on this
7 same page 2 of Exhibit 1005, and I'm going down
8 toward the bottom of the abstract where it says,
9 (as read) As a final endeavor, sort of in the
10 middle of --

11 A Okay.

12 Q Do you see that?

13 A Yep.

14 Q Just for the record, Dr. Brown-Brandl, do
15 you see on page 2 of Exhibit 1005 where Trevarthen
16 says, (as read) As a final endeavor?

17 A I do see that.

18 Q And specifically Trevarthen says,
19 (as read) As a final endeavor, the research
20 undertakes a cross-case comparison to provide a
21 proposed framework with the aim to maximize the
22 advantages and return on investment for farmers by

1 utilizing RFID technology for farm management.

2 Do you see that?

3 A I do see that.

4 Q And so when Trevarthen says "proposed
5 framework," what is he referring to?

6 A He is proposing -- he -- he compares two
7 farms in this thesis, and one farm is only putting
8 the tag in the ear, and the other farm is starting
9 to utilize that -- that RFID tag to gain other
10 information.

11 In addition, Trevarthen -- Trevarthen
12 looks to the current state of the art and proposes
13 additional methods that they could utilize the
14 RFID technology to -- to help in managing of the
15 animals.

16 Q What do you mean by "managing of the
17 animals"?

18 A So when I talk about "managing of the
19 animals," it's -- it is all -- all the things that
20 the producer does in a day. It -- RFID technology
21 can -- managing of the animals could mean
22 understanding milk production of individual

1 animals. It could mean health status. It could
2 mean condition score. It could mean pregnancy
3 status, days in milk. All of those things can be
4 read into a database, and all of that information
5 then can be pulled up very quickly with an RFID
6 number.

7 Q And going back to the statement that I
8 read, when Trevarthen says that his (as read)
9 Proposed -- proposed framework has the aim to
10 maximize the advantages and return on investment
11 for farmers by utilizing RFID technology, do you
12 agree that that's the aim of the Trevarthen
13 thesis?

14 MR. HACKMAN: Objection. Form.

15 A So his aim is to, first, document two --
16 two farms, one that doesn't use the RFID except
17 for the tag that needs to be in the ear and --
18 or -- or bolus or -- there are several other ways
19 to do RFID, but -- other than to use RFID. And
20 one that is using all of those -- at least some of
21 those methods.

22 And then he also looks forward, to saying,

1 okay, so if -- what happens if they would take
2 these off-the-shelf items and -- and start using
3 those. And he proposes -- he proposes some nice
4 stuff.

5 Q (BY MR. LANDERS) I'm flipping ahead to
6 the table of contents in Trevarthen.

7 A Okay.

8 Q And that's on page 4 through 7 of the
9 exhibit number.

10 A Yep.

11 Q And have you reviewed the entire
12 Trevarthen reference in detail?

13 A I have read -- I have read most of it. I
14 probably haven't reviewed it in -- in detail, but
15 I have reviewed it.

16 Q So you have not read the entire Trevarthen
17 reference in detail.

18 Is that fair to say?

19 A I haven't read --

20 MR. HACKMAN: Objection. Form.

21 A I have -- I've reviewed it. I -- I
22 haven't studied it.

1 Q (BY MR. LANDERS) So just to be clear for
2 the record, you have not studied the entire
3 Trevarthen reference?

4 MR. HACKMAN: Objection. Form.
5 Mischaracterizes.

6 A I haven't studied it in detail. I have --
7 I have read through it.

8 Q (BY MR. LANDERS) If you could look at
9 page 5 of the exhibit.

10 Do you see where page 5 refers to
11 chapter 4?

12 A Yes.

13 Q And have you reviewed chapter 4 of
14 Trevarthen?

15 A I have looked -- I have read through this,
16 yes.

17 Q And would you agree that chapter 4 of
18 Trevarthen is a case study discussing a system
19 employee at the Strong Dairy Farm?

20 A It is.

21 Q And chapter 5 of Trevarthen is a different
22 case study related to a different farm from the

1 Strong Dairy Farm, which is the Cochrane Dairy
2 Farm; right?

3 A Yes.

4 Q And if you look at Trevarthen --
5 Trevarthen's -- sorry -- strike that.

6 If you look at Trevarthen's
7 characterization of the Cochrane Dairy, he calls
8 it an advanced case study.

9 Do you see that?

10 A Yes, I do.

11 Q Why do you think Trevarthen would refer to
12 the Cochrane Dairy as an advanced case study?

13 A So like we talked about earlier, he -- he
14 looked at -- he looked at the Strong Dairy Farm.
15 And the Strong -- Strong farm, Strong Dairy, was
16 only using RFID to meet that standard; they
17 weren't using it in its management system, where
18 the Cochrane Dairy was really looking at the --
19 was looking at how can we implement RFID in our
20 management system.

21 And so they had taken several steps to do
22 that, and they were actually reviewing other steps

1 they could take to -- to access or to capture
2 information to help with their management.

3 Q In your opinion, would the Cochrane Dairy
4 system have been considered the state of the art
5 at the time of the invention?

6 MR. HACKMAN: Objection. Form.

7 A It depends on the country you're in. I
8 think this was -- this person was really trying to
9 engage technology to improve his operation. So
10 yes.

11 Q (BY MR. LANDERS) And flipping to page 6
12 of the exhibit, I'm looking at chapter 6 where it
13 says, (as read) Towards total farm management.

14 Did you read chapter 6, Dr. Brown-Brandl?

15 A I did.

16 Q Now, chapters 4, 5, and 6 of the
17 Trevarthen thesis are describing different
18 systems; right?

19 A Yes.

20 Q And the components of the Strong Dairy
21 Farm are not necessarily present in the Cochrane
22 Dairy system; right?

1 A The Strong Dairy Farm is -- is just a
2 dairy farm without utilizing the R- -- the
3 advantages of RFID.

4 MR. LANDERS: I'll have to object as
5 nonresponsive.

6 Q (BY MR. LANDERS) My question was whether
7 the components of the Strong Dairy Farm were
8 necessarily present in the Cochrane Dairy RFID
9 system.

10 MR. HACKMAN: Objection. Form.

11 A Can you reword that?

12 Q (BY MR. LANDERS) All right. So
13 chapters 4, 5, and 6 of Trevarthen are describing
14 three different RFID systems; right?

15 A Three different -- different approaches to
16 using RFID.

17 Q Right.

18 So would it be accurate to say that a
19 component that is described in one of the three
20 approaches is not necessarily present in the other
21 approaches?

22 MR. HACKMAN: Objection. Form.

1 A They are all using the low-frequency RFID
2 in the animals. They have similar components, but
3 they are -- they're all -- each one of those
4 chapters is increasing the use of technology to
5 help manage the animals.

6 Q (BY MR. LANDERS) So not everything
7 described in chapter 6 related to Trevarthen's
8 proposed framework is going to be employed in the
9 Cochrane Dairy system; is that accurate?

10 MR. HACKMAN: Objection. Form.

11 A Not everything that he proposes is
12 currently in this thesis in the Cochrane Dairy.

13 Q (BY MR. LANDERS) And would it be fair to
14 say that some aspects of the Cochrane Dairy system
15 are not necessarily present in the proposed
16 framework?

17 MR. HACKMAN: Objection. Form.

18 A I'm not sure I understand. Your -- so
19 chapter 6 is future-looking. Strong is current.
20 And Cochrane is somewhere in between the
21 future-looking and the Strong Dairy.

22 Q (BY MR. LANDERS) And my question is

1 whether it's accurate to say that not everything
2 described as a component of the Cochrane Dairy
3 RFID system is necessarily present in the proposed
4 framework; right?

5 MR. HACKMAN: Objection. Form.

6 A I think he takes what Cochrane is using
7 and looks forward. I don't think he's saying what
8 Cochrane has proposed is bad. I think what he's
9 saying is that Cochrane is a step.

10 MR. LANDERS: I have to object as
11 nonresponsive because I wasn't asking whether it
12 was bad. So I'll strike that.

13 Q (BY MR. LANDERS) My question is whether
14 every component of the Cochrane Dairy RFID system
15 is necessarily present in Trevarthen's proposed
16 framework.

17 MR. HACKMAN: Objection. Form.

18 A What Cochrane is proposing might be
19 replaced in -- in the total farm system. Some of
20 the pieces get more advanced, and some of them
21 he -- he utilizes or he would leave the same. I
22 don't know exactly what components you are -- you

1 are pointing towards.

2 Q (BY MR. LANDERS) Okay. So just looking
3 at page 6 of Exhibit 1005, do you see where it
4 says, 6.2, Mandatory Components for RFID-Enabled
5 Dairy Farms?

6 A Yes.

7 Q So would it be fair to characterize
8 chapter 6 as a discussion of components of an
9 RFID-enabled dairy farm, but it's not describing a
10 system that had actually been built?

11 MR. HACKMAN: Objection. Form.

12 A Chapter 6 is -- is -- so 6.2 is really
13 looking at what you absolutely need, and then 6.3
14 are things that you could do. These are -- these
15 are items that are available in off-the-shelf
16 components, but may not been employed in the -- in
17 the Cochrane Dairy.

18 Q (BY MR. LANDERS) Trevarthen's proposed
19 framework was not a system that was actually
20 built; right? It's a proposal for a future
21 device; correct?

22 MR. HACKMAN: Objection. Form.

1 A His proposed framework is not on a farm at
2 this time, but the components were available.

3 Q (BY MR. LANDERS) Do you see in the table
4 of contents where Trevarthen refers to 6.2.2, Herd
5 Management Software?

6 A 6.2.2, yes.

7 Q Do you know where the herd management
8 software in Trevarthen's proposed framework is
9 physically located?

10 MR. HACKMAN: Objection. Form. Outside
11 the scope.

12 A Where it would be located is -- the
13 software has to be located on a computer. So I
14 think that's your question.

15 Q (BY MR. LANDERS) Do you know where that
16 computer within the system is proposed to be
17 physically located?

18 MR. HACKMAN: Objection. Form.

19 A So those computers would've been located
20 on the farm.

21 Q (BY MR. LANDERS) I think you used
22 "computers" plurally.

1 So is it your understanding that
2 Trevarthen employed multiple computers to
3 implement the proposed framework?

4 A No. I was talking --

5 MR. HACKMAN: Object to -- objection.
6 Form.

7 A I was -- no. I was talking generally.
8 Computers that hold software for farms are
9 generally located on the farm.

10 Q (BY MR. LANDERS) Do you know how many
11 computers Trevarthen has proposed -- strike that.

12 Do you know how many computers Trevarthen
13 proposes to be used in his proposed framework?

14 MR. HACKMAN: Objection. Form.

15 A I don't think he lists out exactly. It
16 doesn't list how many computers.

17 Q (BY MR. LANDERS) Is it possible that, in
18 your opinion, Trevarthen's system could be
19 employed on multiple computers for the same
20 system?

21 A The -- the software itself could be
22 located on -- on multiple devices. But generally,

1 the data is stored in a database that wouldn't
2 necessarily be on all the devices, but the devices
3 would be able to access the database.

4 Q So to be clear, based on your review of
5 Trevarthen, it's possible that the herd management
6 software described in chapter 6 could be located
7 on multiple computers; right?

8 A Yes.

9 Q And, in your view, it's possible that
10 these different computers could perform different
11 processing functions within that system; right?

12 MR. HACKMAN: Objection. Form. Outside
13 the scope.

14 A The -- the computers could be accessing
15 the same database, and the person using the
16 computer might be asking different questions.

17 Q (BY MR. LANDERS) For example, is it
18 possible that one computer in Trevarthen's
19 proposed framework is programmed to retrieve the
20 RFID number from the animal, while another
21 computer is programmed to analyze data?

22 MR. HACKMAN: Objection. Form. Outside

1 the scope.

2 A So, generally, there is a reader that
3 reads the -- the RFID. An RFID system has a
4 reader and antenna and a tag. And so the reader
5 would -- would capture the information and send it
6 to -- to a computer to log additional information
7 into the database.

8 Q (BY MR. LANDERS) And is it possible that
9 the RFID system is programmed such that one
10 computer is configured to receive the RFID number,
11 while a different computer logs additional
12 information and analyzes the data?

13 MR. HACKMAN: Objection. Form. Outside
14 the scope.

15 A The -- the reader would read the
16 information and send it to a computer that could
17 gather other information. Is it -- is it logical
18 that a different computer would -- would pull
19 information from the database to perform
20 calculations? That is -- that is possible.

21 Q (BY MR. LANDERS) So just to clarify the
22 record, it is possible that the reader would read

1 information and send it to one computer and --
2 strike that.

3 I was trying to understand your -- your
4 response here. Okay.

5 So just to clarify, in your opinion, it's
6 possible that the reader would read the
7 information and send it to a computer that could
8 gather other information, and a different computer
9 could pull information from that database and
10 perform calculations; right?

11 A Yes.

12 MR. HACKMAN: Objection. Form. Outside
13 the scope.

14 A It is possible.

15 Q (BY MR. LANDERS) Do you know whether
16 Trevarthen proposes using the same computer that
17 the Cochrane Dairy Farm used for his proposed
18 framework?

19 MR. HACKMAN: Objection. Form. Outside
20 the scope.

21 I don't know where we're going with this,
22 Counselor. I mean, she's got a lengthy

1 declaration. Maybe you can show us where you're
2 trying to go. It would be helpful.

3 MR. LANDERS: I think you just need to
4 stick to objection, form on these.

5 A The -- can you re-ask the question.

6 Q (BY MR. LANDERS) Yeah.

7 I'm asking if you know whether Trevarthen
8 proposes using the same computer that the Cochrane
9 Dairy Farm used for Trevarthen's proposed
10 framework.

11 MR. HACKMAN: Objection. Form. Outside
12 the scope.

13 A I don't think he talks about whether it's
14 the same computer or -- he talks about the herd
15 management software.

16 Q (BY MR. LANDERS) Do you see in the table
17 of contents where it says, (as read) 6.3.1,
18 Portable RFID Reader?

19 A Yes. Hold on just a second. Yes. It's
20 on --

21 Q Let's go ahead and turn to page 106 of
22 Trevarthen.

1 And then, in this instance, I'm using
2 Trevarthen's page numbering. Is that -- just
3 because of the table of contents.

4 Is that where you're at?

5 A That's where I'm --

6 (Speaking simultaneously.)

7 Q (BY MR. LANDERS) -- exhibit, page 118?

8 A Yes.

9 Q So Trevarthen, page 106 at the top says
10 (as read) 6.3, Optional Components for
11 RFID-Enabled Dairy Farms.

12 Do you see that?

13 A I do.

14 Q And so would you agree that portable RFID
15 readers are optional for an RFID-enabled dairy
16 farm?

17 MR. HACKMAN: Objection. Form.

18 A Well, the Strong Dairy would not have used
19 a portable reader. That -- it isn't a necessary
20 component. So in that -- in that term, yes, it is
21 an -- it's optional component, yes.

22 Q (BY MR. LANDERS) And if a system uses

1 portable RFID readers, then that system does not
2 necessarily need a fixed RFID reader; right?

3 A It -- it depends on what you want to
4 capture and how you want to capture it. So it
5 depends on your farm management system, whether --
6 what components you need.

7 Q And I'm just asking if it's possible to
8 have a system that uses portable RFID readers, as
9 described by Trevarthen, and not have any fixed
10 RFID readers.

11 A It is possible, yes.

12 Q So an RFID-enabled dairy farm could
13 implement an RFID system only using portable RFID
14 readers as opposed to fixed readers; correct?

15 MR. HACKMAN: Objection. Form.

16 A If they used only portable RFID readers,
17 the system would be basic and not have a lot of --
18 not have a lot of automated systems. So it
19 would -- it's possible to -- to use a portable
20 RFID reader to collect information and then
21 manually enter it into a system.

22 Q (BY MR. LANDERS) And I'm looking at the

1 heading 6.3.1, Portable RFID Reader.

2 Do you see that?

3 A Yep.

4 Q And do you see where Trevarthen says,
5 (as read) Having an RFID reader that is portable
6 provides farmers with the ability to read the RFID
7 number of an individual cow; right?

8 A Yep. I see that.

9 Q And, in your opinion, would reading the
10 RFID number of individual cattle with a portable
11 RFID reader be an example of retrieving animal
12 identification information from an RFID device?

13 A It would give you the RFID number of that
14 individual animal.

15 Q And so, in that instance, the portable
16 RFID reader would be programmed to retrieve the
17 RFID number of individual cattle; right?

18 A Yes.

19 MR. HACKMAN: Objection. Form. Sorry.

20 Q (BY MR. LANDERS) And in a system that
21 employs only portable RFID readers, the user would
22 then need to manually input the retrieved data

1 into a herd management software?

2 MR. HACKMAN: Objection. Form.

3 A Not necessarily. If the portable RFID
4 reader was connected to a computer via Bluetooth,
5 you could read that RFID tag, pulling up
6 information and storing things such as weight.

7 Q (BY MR. LANDERS) But if the portable RFID
8 reader was not connected to a computer, then a
9 system that employs only portable RFID readers,
10 the user would then need to manually input the
11 retrieved data into a herd management
12 software; right?

13 MR. HACKMAN: Objection. Form.

14 A Depends on your definition of a computer.
15 If it -- if it was hooked to, at this time -- I
16 mean, there's lots of different things, such as a
17 PDA, maybe a cell phone at that time.

18 But if it was a standalone unit without
19 being Bluetooth-connected to anything other
20 than -- anything, if it was just a standalone
21 reader, then stuff would have to be entered into
22 the database manually.

1 Q (BY MR. LANDERS) So to use your
2 terminology, a portable RFID reader that is a
3 standalone unit -- strike that.

4 Trying to use your terms to make sure
5 we're on the same page. So let me strike that.

6 In a system that only employs portable
7 RFID readers that are standalone units, then, in
8 that system, the user would need to manually input
9 the retrieved data into a herd management
10 software; right?

11 MR. HACKMAN: Objection. Form.

12 A That is true, but I'm not sure why you
13 would ever do that. I don't know why you would
14 have a portable RFID reader to record -- to read
15 an RFID number without having it connected to
16 something.

17 Q (BY MR. LANDERS) It's possible; right?

18 MR. HACKMAN: Objection. Form.

19 A It's possible.

20 Q (BY MR. LANDERS) So it's possible to have
21 a system that employs only portable RFID readers
22 that are standalone units, in which case the user

1 would need to manually input the retrieved data
2 into the herd management software; right?

3 MR. HACKMAN: Objection. Form. Asked and
4 answered.

5 A It -- it's possible. I -- I would think
6 more -- I'm trying to think of uses why you would
7 do that, and the only use I can come up with is
8 possibly to read the RFID to pull information from
9 the database so you know something about that
10 animal. Otherwise, you just have the number.
11 Right?

12 Q (BY MR. LANDERS) Right.

13 So in that case, the portable standalone
14 RFID reader would have a processor that retrieves
15 the animal data; right?

16 MR. HACKMAN: Objection. Form.

17 A Generally, if what you're saying is a
18 portable RFID reader that can only take the
19 identification of the animal needs to be hooked to
20 something in order to -- to gain information from
21 it, to gain information from the database.

22 So if it's going to pull information

1 from -- yeah, I'm not sure why you would want just
2 the one portable RFID reader without it being
3 connected to the Internet or connected via
4 Bluetooth to -- to a computer.

5 Q (BY MR. LANDERS) Let's go to 6.3.1.1 on
6 page 106 of Trevarthen.

7 A Okay.

8 Q And there, Trevarthen is describing a
9 basic portable RFID reader; right?

10 A Yes.

11 Q And then, in 6.3.1.2, Trevarthen describes
12 an advanced portable RFID reader; right?

13 A That is right.

14 Q And now, the advanced portable RFID reader
15 is attached to a PDA device; right?

16 A That is right.

17 Q And in the advanced portable RFID reader,
18 Trevarthen states that the PDA can be loaded with
19 herd management software; right?

20 A Yes.

21 Q And then below that, moving on to
22 page 107, Trevarthen explains that the farmer can

1 use the PDA and ultimately should also be allowed
2 to record and update cow information on-site.

3 Do you see that?

4 A Yeah, Trevarthen states, (as read) The
5 farmer can use the PDA similar to how they would
6 utilize a host desktop computer and be able to
7 browse cow information.

8 Q And then Trevarthen says that, (as read)
9 You should also be, quote, allowed to record and
10 update cow information on-site, end quote; right?

11 A I'm not seeing that exact -- oh, yeah.
12 Yes, I do see that.

13 Q And, there, Trevarthen is describing the
14 advanced portable RFID reader; right?

15 A He is.

16 Q And then in the next section, 6.3.1.3,
17 Trevarthen's first sentence states, quote,
18 (as read) Such data recording and updates may be
19 immediately reflected in the central herd
20 management software, end quote.

21 MR. HACKMAN: Objection. Form.

22 A Yeah, that sentence continues, (as read)

1 If the portable device has a direct network link.

2 Q (BY MR. LANDERS) Right.

3 So that means that the advanced portable
4 RFID reader does not necessarily have a direct
5 link to the central herd management
6 software; right?

7 MR. HACKMAN: Objection. Form.

8 A At that time -- and when I say "that
9 time," I'm talking early 2000s -- not all farms
10 would have Internet available. Actually, today
11 that's true, too -- Internet available on -- in
12 the barn, and so they might have to take that
13 information back, connect it, and then upload it
14 later. So that is a -- a reasonable thing that
15 could happen.

16 Q (BY MR. LANDERS) And then down at the
17 bottom of Section 6.3.1.3, Trevarthen states,
18 (as read) Considering the benefits and enhanced
19 capabilities for farm management operations that
20 such an advanced portable RFID reader would
21 provide, the adoption of such a device is highly
22 recommended.

1 Do you see that?

2 A I do see that.

3 Q And would you agree that Section 6.3.1.3
4 is specifically referring to the use of the
5 advanced portable RFID reader that's described in
6 6.3.1.2?

7 A In that sentence, he says, (as read) Such
8 as an advanced portable RFID reader.

9 So yeah, that's what his sentence says.

10 Q And then in the first sentence of 6.3.1.3,
11 the first sentence of that says, (as read) Such
12 data recording and updates.

13 Do you see that?

14 A I see that sentence.

15 Q And so when he says, "Such data recording
16 and updates," he's referring back to the recording
17 and updates described for the advanced portable
18 RFID reader; right?

19 MR. HACKMAN: Objection. Form.

20 A I need to read this paragraph.

21 (Witness reads document.)

22 Actually, later in that sentence, he talks

1 about, (as read) If the portable device has a
2 direct network link.

3 So not necessarily. He's talking about
4 just the advanced one. He's talking about any
5 portable device that has a direct network link.

6 Q (BY MR. LANDERS) Does Trevarthen describe
7 that the basic portable RFID reader has a network
8 link?

9 MR. HACKMAN: Objection. Form.

10 A He does not in his -- he does not in this
11 talk about the portable RFID having a -- a link to
12 the network, but a POSA would know that a portable
13 RFID reader can -- at that time would've been able
14 to be Bluetoothed to a computer or a PDA or
15 something similar.

16 Q (BY MR. LANDERS) But Trevarthen does not
17 expressly describe that; right?

18 MR. HACKMAN: Objection. Form.

19 A He doesn't, but I'm not sure he excludes
20 that -- that concept in his writing.

21 Q (BY MR. LANDERS) But the basic portable
22 RFID reader in Trevarthen is not necessarily

1 linked to a network; right?

2 MR. HACKMAN: Objection. Form.

3 A A portable RFID reader doesn't necessarily
4 have to be connected to -- to a computer. But to
5 use that -- to use that to help with management,
6 you would need it to be hooked to something, need
7 it to be wireless and hooked to something.

8 Q (BY MR. LANDERS) Going back to this
9 6.3.1.3 paragraph.

10 A Okay.

11 Q Do you see the sentence that says,
12 (as read) Such an arrangement? It's toward the
13 middle of that paragraph.

14 A I see that sentence.

15 Q So Trevarthen is describing an arrangement
16 that, (as read) Removes the duplication of effort
17 that is currently required on both the Strong and
18 Cochrane farms for recording information to their
19 herd management, as farmers would not be required
20 to manually record this data in the field before
21 entering it again into the herd management
22 software at a later time.

1 Do you see that?

2 A Yeah. Let me read that sentence, please.

3 (Witness reads document.)

4 Okay. I've read that sentence.

5 Q So there are systems, such as the Strong
6 and Cochrane farm, where data is manually recorded
7 in the field and then also entered again into a
8 herd management software at a later time; right?

9 A So I believe this -- what this is saying
10 is that the -- and it happens on farms today as
11 well as then, is not everything is directly
12 entered into the database.

13 So there would -- so I think what he's
14 saying is, using an RFID system in different
15 locations could -- could minimize the work on the
16 farms by directly -- and this is what we were
17 talking about -- directly put that data from the
18 animal or from the external device directly into
19 the -- into the database.

20 So, for example, they wouldn't -- they
21 wouldn't write down weights and then have to
22 manually record weights. They would use an RFID

1 system to capture the RFID, link it to the animal
2 and the herd management software and then
3 record -- record the weight automatically. I --
4 that is -- that's my understanding of that
5 sentence.

6 Q So flipping to page 122 of Trevarthen.

7 A Just to be clear, that is the page 122 of
8 the Trevarthen numbers?

9 Q Yes. When I can, I'm using Trevarthen's
10 numbers, because that's how the petition cited
11 them. So --

12 A Okay. That's okay.

13 Q -- in this instance, yes.

14 And I'm looking at the first full
15 paragraph on page 122 of Trevarthen.

16 Do you see that?

17 A Where it starts, (as read) There may be --
18 there may also?

19 Q Correct.

20 And I'm looking at the sentence where --
21 that starts with, (as read) As such, and it
22 mentions allowing the system to alert the farmer.

1 Do you see that?

2 A I do.

3 Q And does Trevarthen explain what a farmer
4 should do when they get an alert stating that a
5 temperature has fluctuated?

6 A Let me read that sentence.

7 (Witness reads document.)

8 Q And you may also want to look at page 121.
9 It's a whole section.

10 A Okay.

11 MR. HACKMAN: I'm just going to put an
12 objection to form.

13 A (Witness reads document.)

14 Q Could you let me know when you're finished
15 so I can re-ask the question, if you don't mind.

16 A I will.

17 (Witness reads document.)

18 Okay. Can you repeat the question.

19 Q Does Trevarthen explain what a farmer
20 should do when they get an alert stating that a
21 temperature has fluctuated?

22 MR. HACKMAN: Same objection.

1 A So let me take a step back for a minute
2 and -- and explain that a farm management system
3 is not necessarily telling the producer exactly
4 what to do. A farm management system's -- their
5 whole purpose is not to replace the producer in
6 making decisions, but to provide information for
7 the producers to making decisions.

8 So what Trevarthen is saying is,
9 there's -- there's many things that could cause a
10 temperature increase, and such a temperature
11 fluctuation could -- could be -- and he uses a
12 beeper device for that farmer. And so that could
13 mean a lot of different things.

14 And Trevarthen points out that it could
15 mean that the animal is -- is sick, or it could
16 mean the animal is entering heat and -- and so
17 just because the temperature is increased, it
18 sends an alert to the producer, and the producer
19 can then look at other sources of information
20 to -- and looking at the animal itself to make
21 decisions on -- on what to do with that
22 information.

1 Q (BY MR. LANDERS) Are you aware of any
2 systems that have an alert -- strike that.

3 So, in general, the more alerts that an
4 animal management system generates, the more time
5 the producer spends looking at other sources of
6 information, as well as the animal itself in order
7 to make a determination on what to do?

8 MR. HACKMAN: Objection. Outside the
9 scope. Mischaracterizes the response.

10 A I don't think that is exactly worded
11 correctly. If a system puts out too many alerts,
12 it becomes an obsolete system. Producers aren't
13 going to pay attention to it. The -- the alerts
14 have to -- have to be in such a way that they
15 are -- they provide important information.

16 That doesn't mean that -- that information
17 from temperature is going to -- regardless of what
18 model or what background logical expression you
19 give it, it's going to point towards this animal
20 needs to be treated, this animal needs to be
21 treated with this, this animal -- so I guess
22 I'm -- so re-ask the question to make sure that

1 I'm understanding. Maybe I'm not understanding
2 your question.

3 Q (BY MR. LANDERS) You were getting at part
4 of what I was trying to ask, so let me just kind
5 of build off what you said. Well, strike that.

6 You testified that if a system puts out
7 too many alerts, it becomes an obsolete system; is
8 that correct?

9 A Right. Like, if an an- -- if a system is
10 putting out false alerts that the producer would
11 then stop -- or would start to ignore it. So they
12 have to be a targeted alert.

13 Q So if a system is putting out false
14 alerts, then your opinion, a person of skill would
15 understand that a producer would stop or would
16 start to ignore it.

17 Is that fair to say?

18 MR. HACKMAN: Objection. Form.

19 A If the information -- if the system was
20 creating numerous false alerts, a person of the
21 ordinary skill would -- and a producer would
22 understand that the producer would start to ignore

1 the alerts.

2 Q (BY MR. LANDERS) So is it fair to say
3 that a person of skill would avoid implementing a
4 system that created numerous false alerts?

5 A It depends on how numerous those alerts
6 are and if the system was providing other useful
7 information.

8 Q If a system -- strike that.

9 If a system was producing numerous false
10 alerts for a specific alert, would the person of
11 skill avoid implementing that specific alert --

12 MR. HACKMAN: Objection.

13 Q (BY MR. LANDERS) -- in an RFID system?

14 MR. HACKMAN: Oh, sorry.

15 Objection. Form.

16 A Can you give me an example?

17 Q (BY MR. LANDERS) If a system was
18 producing numerous false alerts for mastitis,
19 would the person of skill avoid implementing that
20 system specifically for mastitis detection?

21 A I wouldn't necessarily say that. It
22 depends on -- on what information they were

1 getting out of the system to detect mastitis.

2 Q If all they're getting is an alert that
3 says that the cow has mastitis, but it was
4 generating false alerts, would the person of skill
5 avoid using that particular alert?

6 MR. HACKMAN: Objection. Form.

7 A They might not look at the alert, but they
8 might -- they might keep the data that's going
9 into the database, because they -- a producer -- a
10 producer knows their animals and might be able to
11 look at that base information and use that base
12 information.

13 Q (BY MR. LANDERS) It might be helpful to
14 look at your declaration for this one.

15 A Okay.

16 Q And I'm on page --

17 MR. HACKMAN: Which declaration?

18 Q (BY MR. LANDERS) Sorry. Your '206
19 declaration. I appreciate that clarification.

20 A Okay.

21 Q So, Dr. Brown-Brandl, do you have your
22 '206 declaration in front of you?

1 A I do.

2 Q Okay. If you could turn to page 73 of the
3 declaration, which would be Exhibit Number --
4 page 81. Sorry. It's a little confusing with the
5 two numbers, but...

6 A Yeah.

7 MR. HACKMAN: And then you add in
8 paragraph numbers.

9 MR. LANDERS: Right. There you go.

10 Q (BY MR. LANDERS) So I'm looking at
11 paragraph 151. Let me know when you're there.

12 A I am here. Give me a minute to read the
13 paragraph.

14 Q Sure.

15 A (Witness reads document.)

16 Okay.

17 Q And then your declaration states that, (as
18 read) Trevarthen, however, teaches having the RFID
19 reader provide date-time information rather than
20 retrieving date-time information from the RFID
21 device itself.

22 Do you see that?

1 A I do.

2 Q Was this a flaw in Trevarthen's system?

3 A No. Actually, there are -- it depends on
4 the information that you're retrieving at the
5 time. There -- there is actually a reason that
6 you want to get the date-time information from the
7 RFID reader instead of the RFID device.

8 And that is because if every device has
9 its own date-time, date-time chips tend to -- to
10 not clock time at the same rate. And so
11 milliseconds' difference can add up over time.
12 Therefore, if you are reading the time-date at the
13 reader, you know that that time stamp is the same
14 time stamp regardless of animal. Does that make
15 sense?

16 So if you -- if you rely on the RFID
17 device to provide date-time, one -- one device
18 might read 12:00 noon. One device might be 12:01.
19 One device might be 11:58. Therefore, it
20 sometimes is very useful to use a centralized
21 device to -- to time-date stamp things.

22 There are other reasons that you would

1 want to have the time-date on the device itself.
2 And if you want me to explain that, I can explain
3 that as well.

4 Q So just to be clear on my original
5 question, retrieving the date-time information
6 from the RFID reader was not a flaw in
7 Trevarthen; right?

8 A It was -- there are reasons that you want
9 to -- want to read it exactly at the RFID reader,
10 as explained.

11 Q And persons of skill at the time of the
12 invention would've understood those reasons?

13 A Yeah. Like I said, there are reasons to
14 record the date-time from the device, but there
15 are also reasons to record it exactly at the
16 reader. And they're -- they're different --
17 they're different reasons.

18 Q So in some instances, the date-time
19 information stored at the bolus would be different
20 than the date-time information stored in the
21 reader; right?

22 A The -- if you have -- if you have

1 different chips in different devices, those chips
2 clock time at slightly different rates; therefore,
3 you can have time drift.

4 So -- so having a centralized point that
5 you're reading the date-time is advantageous,
6 especially, like, in this -- in my paragraph, I
7 talk about as the cow enters a milking parlor. So
8 that time-date stamp would be ideal to be read at
9 the reader.

10 Q So at the time of the invention, there
11 would've been reasons why a person of skill
12 would've wanted to use the RFID reader to acquire
13 the time stamp; right?

14 A There would've been reasons, yes.

15 MR. LANDERS: I don't know if we're
16 getting close to lunch, but I've kind of hit a
17 natural stopping point.

18 MR. HACKMAN: Is this a good time for you?

19 THE WITNESS: Yeah, it's fine for me.

20 MR. HACKMAN: Okay. Makes sense.

21 MR. LANDERS: We'll go off the record.

22 ///

1 (A lunch recess was taken from 12:36 p.m.

2 to 1:20 p.m.)

3 MR. LANDERS: Back on the record.

4 Q (BY MR. LANDERS) Okay. Welcome back,

5 Dr. Brown-Brandl.

6 I have to ask for the record: Did you
7 discuss any of the substance of your testimony
8 today with your counsel during lunch or during the
9 last break?

10 A We did not.

11 Q Next, I would like to turn to your '206
12 declaration, page 89 of the declaration itself,
13 and paragraph 186.

14 A Okay.

15 Q And I recall earlier today you mentioned
16 that you wanted to clarify something that you
17 believe was miswritten on the Laitinen reference
18 as a minus 1, something to that effect.

19 Do you recall that?

20 A Yeah.

21 Q And in paragraph 186, the third line of
22 your '206 declaration, do you see that you have

1 transcribed that modified version of that formula
2 from Laitinen?

3 A Yeah. This is the equation that was in
4 the original patent declaration.

5 Q So this -- what you've written here is
6 different from the patent at issue,
7 though; correct?

8 A The -- this is different than the patent
9 that was issued, yes.

10 Q Okay. So from a mathematical standpoint,
11 how does the -- the formula, as transcribed here,
12 differ from what was disclosed in Laitinen?

13 A The -- the Laitinen reference talks about
14 an inverse logic function, but fails to provide
15 the minus in front of the -- the superscript "1."

16 Q Now, in your response just now, you
17 referred to the Laitinen reference as calling it
18 "an inverse logic function," but I believe you
19 just used the words "inverse function."

20 Does that sound right to you?

21 A Without -- without looking at the -- the
22 patent application, I -- I don't recall exactly

1 what it says.

2 Q Okay. So my question on this so-called
3 inverse function in Laitinen that you've
4 transcribed here in paragraph 186, I think your
5 testimony was that -- that the Laitinen reference
6 talks about an inverse function, but fails to
7 provide the minus in front of the superscript "1."

8 And my question is: Mathematically, how
9 does the function without the minus sign differ
10 from a function with a minus sign?

11 A Well, one of them says that they are
12 directly related. One of them says that they're
13 inversely related.

14 Q So there's a substa- -- strike that.

15 There is a substantive difference
16 mathematically between x equals f , parenthesis, y ,
17 z when the -- when the "1" is -- has the minus
18 sign versus when it doesn't have the minus
19 sign; right?

20 A That is right.

21 Q And when the function, as transcribed in
22 Laitinen without the minus sign, it's your

1 understanding that the -- in that equation, the
2 variables are directly related.

3 Is that fair to say?

4 A Yeah. Yes.

5 Q And then in the equation that you've
6 transcribed here with the minus 1, the difference
7 would be that, then, the variables on either side
8 of the equation are inversely related to one
9 another; is that accurate?

10 A Yes.

11 Q So there is a difference mathematically
12 between what you've transcribed here in
13 paragraph 186 and what was issued in the Laitinen
14 patent that you analyzed in your
15 declaration; right?

16 A Yes. Like I said, it was a typo in the --
17 in the -- the patent, as published. If you look
18 at the patent as -- as -- and I'm not going to use
19 quite the right terminology, but as submitted,
20 there is a minus 1. It's really difficult to see
21 because the fonts kind of run into each other. So
22 it is just a typo.

1 Q But that's based on your assessment of
2 what was submitted; right? There wasn't anything
3 in the submission that -- that -- that indicates
4 that the final version was a typo, though; right?

5 A No. Would you like to see a copy of
6 the...

7 Q No thanks.

8 My question is: There's no formal
9 document from the patent office that identifies
10 this error; it's based on your review of what was
11 submitted; right?

12 A That is right.

13 MR. HACKMAN: Counsel, just so I can
14 clarify, you mean a document issued by the patent
15 office, I guess, a certificate of correction?

16 MR. LANDERS: I'm just asking -- strike
17 that.

18 I'm asking Dr. Brown-Brandl if she's seen
19 anything acknowledging that this was an error. It
20 can be at the patent office or otherwise.

21 Q (BY MR. LANDERS) Or was it just based on
22 your review of the submissions?

1 A It was based on the review of the
2 submissions.

3 Q So you've made the determination on your
4 own that this was a mistranscription in
5 Laitinen; right?

6 A If you look at the documents, you could --
7 you can see it's clearly -- the minus 1 is clearly
8 there.

9 Q And the minus 1 is not clearly there in
10 the patent at issue; correct?

11 A That is right.

12 Q So going back to the inverse function
13 itself as the way -- strike that.

14 Going back to Laitinen's function, as you
15 transcribed it here in paragraph 186, would you
16 characterize that as an inverse function?

17 A Yes.

18 Q Now, do you use inverse functions in your
19 day-to-day work?

20 A Not necessarily. We use -- currently,
21 we're using a lot of AI and -- and other models,
22 but yeah, we have used functions.

1 Q And to be clear, there's a difference
2 between AI and inverse functions; right?

3 A Absolutely.

4 Q Based on your response -- strike that.

5 Is it your opinion that there's a big
6 difference between AI and inverse functions?

7 MR. HACKMAN: Objection. Form.

8 A Yes. The -- yes. I -- your question was,
9 do I commonly use this -- this function in my
10 day-to-day work? And I -- I do not.

11 Q (BY MR. LANDERS) And in the -- strike
12 that.

13 In your past experience, is it also true
14 that you did not use inverse functions, such as
15 the one described in Laitinen, in your day-to-day
16 work?

17 MR. HACKMAN: Objection. Form.

18 A We've developed many equations for animal
19 response, so yeah. I'm sure we've -- I'm sure
20 we've seen inverse functions in animal response.

21 Q (BY MR. LANDERS) Have you used
22 counterpropagation networks in your work ever?

1 A Have not. I'm not aware of those.

2 Q Do you have an understanding of the
3 underlying math that goes into a
4 counterpropagation network?

5 A That isn't something I am familiar with.
6 So if you want to describe them to me, I could
7 probably understand them, but I'm -- that isn't a
8 term that I'm familiar with.

9 Q With respect to Laitinen, is your
10 analysis, for example here on paragraph 186, based
11 on what was disclosed in Laitinen?

12 A Can you rephrase that question.

13 Q Did you undertake any analysis to
14 determine whether the function described in
15 Laitinen would work for its intended purposes
16 mathematically?

17 A No. It's -- it's just a general logic
18 expression. So, no, I didn't -- I did not
19 validate that it would work.

20 Q So sitting here today, you're not sure if
21 the function described in Laitinen would work for
22 its intended purposes; right?

1 A So if you read my -- my deposition [sic]
2 in 186, I say a POSA would've understood that this
3 expression to determine whether an animal's sick
4 or not and identify -- yeah.

5 So this is a function that we would use.
6 I mean, it's -- it's not -- it's just a -- it's a
7 logical expression. It isn't a whole equation.
8 But, yes, those sort of functions have been used
9 by myself and -- and others to describe animal
10 response.

11 Q So sitting here right now, you didn't
12 undertake an analysis of the underlying
13 counterpropagation network discussed in Laitinen
14 to determine if it would indeed work to identify
15 whether an animal is sick?

16 MR. HACKMAN: Objection. Form. Outside
17 the scope.

18 A I'll stand by what we said here in my --
19 in my declaration, that he uses this, and -- and
20 it's looking at animal temperatures at different
21 times, and he is concerned with detecting animal
22 disease. And a POSA would've been -- would've

1 understood that expressions such as this could be
2 used.

3 Q (BY MR. LANDERS) But you didn't undertake
4 an analysis on your own to test that opinion, did
5 you?

6 A I -- I did not. I'm not sure I would've
7 needed to for the purposes of this. If you look
8 in the literature and you look at other cites that
9 we -- other people that we have cited in this
10 paragraph, it also says that -- that -- that this
11 function would've -- would've sufficed.

12 Q So, in your opinion, these other
13 references that you're citing are using the exact
14 same formula that Laitinen disclosed?

15 A They're using a similar equation of --
16 this is just a logical expression, and they're
17 using maybe not exactly the same logical
18 expression, but they're using -- they're saying
19 that core body would -- would increase. And...

20 Q So, in your opinion, the equation in
21 Laitinen -- strike that.

22 So in your answer earlier you stated that

1 you're not sure I would have needed to for the
2 purposes of this in response to my question of
3 whether you undertook an analysis.

4 So does that mean you personally did not
5 analyze whether Laitinen's inverse function would
6 indeed identify whether a cow was ill?

7 MR. HACKMAN: Objection. Form.

8 A Based on my experience and based on other
9 literature, I -- I did not use this -- I didn't do
10 the math to calculate whether that logical
11 expression would work. But based on my experience
12 and on a POSA's experience and based on these
13 other references, that would -- yeah, an inverse
14 function would work.

15 Q (BY MR. LANDERS) Is a neural network the
16 same thing as an inverse function?

17 A I would say no. A neural network might
18 employ an inverse function to make those
19 decisions, but you feed -- you give it inputs, and
20 you ask for an output. In a neural net, you don't
21 necessarily see all the math that goes into making
22 those determinations in a neural network.

1 Q Have you developed a neural network?

2 A I have.

3 Q For purposes of this declaration, did you
4 analyze any neural networks in the prior art?

5 A No, I did not.

6 Q In your view, is temperature a necessary
7 input into Laitinen's so-called inverse function?

8 MR. HACKMAN: Objection. Form.

9 A So as -- as described here in my
10 declaration, he is using temperature as an input
11 to his function.

12 Q (BY MR. LANDERS) And is it your
13 understanding that that temperature would be input
14 in realtime into Laitinen's so-called inverse
15 function?

16 MR. HACKMAN: Objection. Form.

17 A It depends on your definition of realtime.
18 Ideally, the temperature would be taken on a
19 frequent-enough basis, but realtime -- the
20 frequency of -- of collecting that data varies.
21 Right? It could be taking that temperature twice
22 a day, or it could be taking it every one second.

1 So...

2 Q (BY MR. LANDERS) And when you say
3 "frequent-enough basis," what would be a
4 frequent-enough basis in this context?

5 A It depends. I'm going to quantify that,
6 is it really depends on -- on a lot of different
7 things. But if you -- if you're looking for it to
8 pass a threshold, then maybe twice a day is
9 enough. If you're looking to determine the -- the
10 cyclic nature of the temperature, you probably
11 have it every hour.

12 Q In the context of Laitinen's inverse
13 function, which frequency would be needed?

14 A So...

15 MR. HACKMAN: Objection. Form.

16 Q (BY MR. LANDERS) Strike that.

17 In the connection of Laitinen's inverse
18 function, how frequent would you need temperature
19 measurements to be in order for the inverse
20 function to work properly?

21 MR. HACKMAN: Objection. Form. Outside
22 the scope.

1 A If you -- once again, if you read my
2 declaration on page 186, he's talking about
3 correlating temperature to animal disease, which
4 would be more of a threshold. So once or twice a
5 day would probably be okay.

6 Q (BY MR. LANDERS) So you understand
7 Laitinen's inverse function to be talking about
8 correlating temperature to animal disease, which
9 would be a threshold calculation?

10 A Yeah. If you look here, the state
11 variables include temperature at different times.
12 So he is expressly concerned with detecting
13 temperature. And for disease, that would've
14 been -- a POSA would've said normally that would
15 be once it reaches a certain -- a certain
16 threshold temperature or a temperature which you
17 should be concerned at.

18 Q So the analysis in your declaration with
19 respect to Laitinen's inverse function is based on
20 that understanding.

21 Is that fair to say?

22 A Yeah. Yes.

1 Q And does a neural network operate
2 differently than what you just described?

3 A So a neural net is, once again, taking
4 inputs and providing an output. So you can have
5 several inputs, and you can have more than one
6 output. You can have one output. And so the
7 exact functions of neural networks develops, and
8 it's -- correlating your inputs to your outputs
9 really depend on the data.

10 So it can be or it can be a more
11 sophisticated equation. It's -- it's based on
12 how -- the inputs and the outputs you feed into
13 the model.

14 Q But that's not your understanding of
15 Laitinen; right?

16 A Laitinen is a logical expression, which
17 can represent several different things. So...

18 Q But not a neural network; right?

19 A It does- --

20 MR. HACKMAN: Objection. Form.

21 A It doesn't preclude a neural network. It
22 just -- it says a logical expression.

1 MR. HACKMAN: Counsel, I'd like to have
2 Laitinen as an exhibit.

3 MR. LANDERS: Please refrain from the
4 speaking objections.

5 Q (BY MR. LANDERS) Dr. Brown-Brandl, the --
6 I handed you the wrong thing.

7 Just for the record, I handed
8 Dr. Brown-Brandl Exhibit 1011; is that right?

9 A Yes.

10 Q Okay. I meant to hand you Exhibit 1010.

11 MR. LANDERS: Can you hand her that.
12 Here you go.

13 MR. HACKMAN: Oh, thanks.

14 Q (BY MR. LANDERS) Okay. Dr. Brown-Brandl,
15 the court reporter has handed you what's been
16 marked in both IPR proceedings as Exhibit 1010,
17 which is a PCT publication where the inventor and
18 applicant is Liao.

19 Do you recognize this document,
20 Dr. Brown-Brandl?

21 A I do.

22 Q And did you read the entirety of

1 Exhibit 1010?

2 A I did.

3 Q And would you consider Liao to be a
4 reliable source of information?

5 A I would.

6 Q And do you have any reason to doubt any of
7 the assertions in Liao?

8 A No.

9 Q And could you turn to -- I'm using Liao's
10 page numbers at the top. Could you turn to
11 page 3, please.

12 A Oh, page 3.

13 Q Yeah, that's page 4 of the exhibit, page 3
14 of Liao.

15 A Okay.

16 Q And my questions pertain to the paragraph
17 at lines 19 through 23, so the last full
18 paragraph.

19 Do you see that one?

20 A Yep.

21 Q And then in Liao, page 3, line 20, do you
22 see where it refers to a random data generator?

1 A Yes.

2 Q And what's your understanding of random
3 data generator in Liao?

4 A Let me read this paragraph so I make sure.

5 (Witness reads document.)

6 So as I understand this paragraph, they
7 are using a random data generator to produce the
8 first set of input parameters for their model.

9 Q And in that same paragraph, do you see
10 where Liao says, (as read) Appropriate training
11 data is provided, based on which the farmer can
12 illustrate to the system how he/she wishes that
13 decisions of a certain kind should be made?

14 A Yes, I see that.

15 Q Okay. So is Liao describing the system in
16 which the farmer looks at random data that is
17 generated -- strike that.

18 So in Liao's system, the farmer is looking
19 at random data that has been generated and then
20 telling the system what decision he would make
21 based on that set of data?

22 MR. HACKMAN: Objection. Form.

1 A It appears that they're developing a
2 training set of data. And so within a -- certain
3 parameters, they're giving -- they're giving the
4 producer a varied set of -- of inputs and asking
5 the producer how they would classify or how they
6 would make decisions based on that input data.

7 Q (BY MR. LANDERS) And when you refer to
8 "they would make decisions based on that input
9 data," you're referring to a human?

10 A A farmer. Yep. Farmer. And that's how
11 you build a data set.

12 Q So, essentially, Liao is describing how to
13 train a system to make decisions based on random
14 input data?

15 A Yes.

16 Q So that input data isn't calculated; it's
17 provided by a system that has been producing
18 variables at random; right?

19 MR. HACKMAN: Objection. Form.

20 A Later in that paragraph, it says,
21 (as read) Therefore, appropriate training data was
22 provided to the farmer.

1 So it wasn't just completely random. They
2 were -- it was appropriate data. And, yes, trying
3 to build a big data set, they might've had to
4 change some of the values to create scenarios that
5 would likely happen.

6 Q (BY MR. LANDERS) And the values that you
7 just referred to are coming from what Liao is
8 calling a random data generator; right?

9 A Yes.

10 Q And if you could flip ahead to page 8 of
11 Liao, Number 8 at the top. One more page.

12 A Oh, sorry.

13 Q Page 8?

14 A Yep.

15 Q Okay. And I'm looking at the last full
16 paragraph, which is lines 23 through 29 of Liao,
17 page 8.

18 Are you with me?

19 A Yes.

20 Q And do you see where Liao, page 8, at
21 line 24 refers to a random data generator 115?

22 A I do.

1 Q Is your understanding that that random
2 generator 115 is the same concept that we just
3 discussed from Liao, page 3?

4 A I need to evaluate this quickly.

5 Yes, I believe so.

6 Q And to use Liao's terminology, is the
7 variable D_rand [sic] an input parameter that is
8 randomly generated by Liao's system?

9 A Yeah, that's how I would understand that.

10 Q Sorry. Just to clarify, it's not
11 D underscore. Let me re-ask that. Strike that.

12 Dr. Brown-Brandl, is your understanding
13 from Liao that the variables noted Drand are input
14 parameters that are randomly generated by Liao's
15 system?

16 A That is how I would interpret that.

17 Q And so data labeled as Drand in Liao would
18 be randomly generated by Liao's system; right?

19 A Yes.

20 Q And if you could flip back three pages to
21 page 5 of Liao. And I'm looking at the middle
22 paragraph of page 5 of Liao, which are lines 14

1 through 27.

2 Do you see that? Paragraph starts with,
3 (as read) In the case of.

4 A Yes.

5 Q And does paragraph starting at page 5,
6 line 14 of Liao discuss an insemination decision?

7 A (Witness reads document.)

8 I'm reading this paragraph.

9 Yes.

10 Q And in this paragraph of Liao, is Liao
11 describing a process for determining whether a cow
12 should be inseminated?

13 A That is my understanding.

14 Q And looking closely at that paragraph,
15 which is Liao, page 5, lines 14 through 27, Liao
16 provides a number of input parameters for
17 determining whether to inseminate a cow; right?

18 A Yes. This paragraph outlines those input
19 parameters.

20 Q One of the input parameters for Liao's
21 insemination decision is animal identity; correct?

22 A Yes, on line 17.

1 Q And line 15 as well; correct?

2 A And on line 15 as well, yes.

3 Q Another input parameter in Liao's
4 insemination decision is number of days in
5 milk; right?

6 A Yes.

7 Q And another input parameter in Liao's
8 insemination decision is a peak milk yield and a
9 latest lactation; right?

10 A Yes.

11 Q And another input parameter into Liao's
12 insemination decision is a heat detection
13 status; right?

14 A Yes.

15 Q And so you'd agree that a heat detection
16 status is an input into Liao's insemination
17 decision on page 5; right?

18 A Yes, along with all the other things that
19 we talked about, number of days in milk, peak
20 yield, peak milk yield, and heat detection.

21 Q So, specifically, a heat detection status
22 is one of the inputs, along with a number of other

1 inputs, into Liao's insemination decision; right?

2 A Yes. It would be one of the inputs.

3 Q And does Liao explain how or why any of
4 its input parameters are used in any of its
5 decisions?

6 MR. HACKMAN: Objection. Form.

7 A On page 20 of Liao, paragraph 10, they
8 talk about all the input parameters for
9 insemination.

10 Q (BY MR. LANDERS) So based on your
11 understanding, the reason why one would include
12 the input parameters listed on page 5 that we were
13 just looking at would be to determine whether to
14 inseminate a cow?

15 A Yes.

16 Q Does Liao provide an explanation of why
17 those particular input parameters were used?

18 A I -- in -- on page 5, they describe it
19 in -- in just broad sweeping detail, but not
20 specifically why each of them were put into the
21 model.

22 Q So Liao does not specifically describe why

1 each of the inputs into its insemination decision
2 were put into the model.

3 Is that fair to say?

4 A That is fair to say.

5 If you look at these, a POSA would've --
6 would've likely picked out the same -- the same
7 list of input parameters.

8 Q But Liao itself doesn't provide any reason
9 why the particular input parameters were
10 chosen; right?

11 MR. HACKMAN: Objection. Form.

12 A No, I do not see the reason why.

13 Q (BY MR. LANDERS) Thank you.

14 You can flip to page 9 of Liao, please.
15 And I'm looking at the last couple paragraphs,
16 lines 18 through 34.

17 Do you see that?

18 A Yes.

19 Q And on page 27 of Liao, it refers to a
20 random data generator 115.

21 And that would be the same random data
22 generator 115 that we discussed earlier; correct?

1 A Yeah. What -- what lines are you talking
2 about?

3 Q I'm on line -- sorry -- line 28 of page 9
4 of Liao.

5 A Okay. I was in the paragraph above.

6 Yeah, that random generator 115 refers to
7 the figure on the first page of Liao.

8 Q And the figure on the first page of Liao
9 has a Number 115, and it's pointing to a
10 box; right?

11 A It does.

12 Q And so the Drand referenced on line 32 of
13 page 9 would be referring to variables that were
14 generated by the random data generator; correct?

15 A Yes. In building their model, yes.

16 Q At the bottom of page 9, do you see the
17 sentence that starts with, (as read) The below
18 table? It's the very last sentence, and it
19 continues on to page 10.

20 A Yep.

21 Q Now, the sentence on pages 9 and 10 says,
22 (as read) The below table exemplifies the first

1 set of input parameters Drand being applicable to
2 insemination decisions.

3 Do you see that?

4 A I do.

5 Q And you see a chart on page 10 of
6 Liao; right?

7 A I do.

8 Q And the variables listed under Drand in the
9 chart on page 10 would be randomly generated input
10 parameters; correct?

11 A According to the paragraph above this --
12 let me verify that that's true.

13 (Witness reads document.)

14 Yeah. If you read the paragraph -- if you
15 read in the paragraph above that, it explains what
16 that table -- the below table exemplifies the
17 first set of input parameters Drand from being
18 applicable to insemination decisions.

19 Q Okay. So underneath the chart on page 10,
20 at lines 10 through 11, Liao says, (as read) The
21 fourth parameter indicates whether the animal is
22 in heat presently.

1 Do you see that?

2 A Yes.

3 Q So heat in the chart on page 10 of Liao
4 refers to an input parameter; right?

5 A Yes.

6 Q And that input parameter indicates whether
7 the animal is in heat presently, according to
8 Liao; right?

9 A According to this table, yes.

10 Q And that value underneath "heat" in the
11 chart would, therefore, be randomly
12 generated; right?

13 A Yeah. It's under the -- the heading Drand.
14 So, yes, those would've been randomly -- those
15 were randomly generated.

16 Q And underneath -- strike that.

17 I'm looking at the chart.

18 Underneath --

19 A Oh, the chart or the table?

20 Q This is a new question.

21 A Sorry.

22 Q Strike that.

1 Looking at the table on page 10,
2 underneath DECu, would you understand those values
3 to be input by a user?

4 A Yeah. If you read line 4 and 5 above that
5 table, hence the column that represents
6 user-generated input data is Du.

7 Q So is that a "yes"?

8 A Yeah. I'm -- yep. Yes.

9 Q So in the chart on page 10, the user has
10 indicated whether the animal should be inseminated
11 based on the data that's in the respective
12 row; right?

13 A That is correct.

14 Q And according to Liao, in Table 10, there
15 are cases where an animal is in heat presently but
16 should not be inseminated; correct?

17 A Yes, that is correct.

18 Q So determining whether an animal in heat
19 is not the same as determining of whether an
20 animal should be inseminated.

21 Is that fair to say, according to Liao?

22 A Yeah, there are reasons that you wouldn't

1 inseminate an animal, even if they were in heat.

2 Q And still on the chart on page 10 of Liao,
3 according to Liao's chart, there are cases where
4 an animal is not in heat presently but should be
5 inseminated; right?

6 A Yes. Line 200.

7 Q So, again, determining whether an animal
8 should be inseminated is not the same as
9 determining whether that animal is in heat; right?

10 A Yeah. Determining whether the animal's in
11 heat or not is one -- one consideration.

12 Q And a person of skill would agree with
13 that; right?

14 A Yes.

15 Q Turning to page 11 of Liao, looking at the
16 first two paragraphs. I'm understanding that Liao
17 is using inputs that we just saw in the chart on
18 page 10, including Drand and DECu to train the
19 system to create rules.

20 Is that an accurate characterization of
21 Liao?

22 A Yep. Yes, that is -- that is my

1 understanding.

2 Q And in the third full paragraph of Liao,
3 on page 11, Liao is talking about a decision
4 support mode.

5 Do you see that? And I'm looking
6 specifically at page 11, line 17.

7 A Yes.

8 Q And would it be accurate to say that
9 Liao's decision support mode uses dairy farm
10 data D, and that that data would reflect the same
11 input parameters as Drand that we've been
12 discussing?

13 A Yes.

14 Q And Liao does not describe the source of
15 where dairy farm data D comes from; right?

16 MR. HACKMAN: Objection. Form.

17 A If you look at Liao, I think they can get
18 their information for their model from -- from
19 multiple different sources. I don't think they
20 talk about specific places or sensors it needs to
21 come from.

22 Q (BY MR. LANDERS) Got it.

1 And turning to page 12 of Liao, do you see
2 a chart on page 12 of Liao?

3 A I do.

4 Q Okay. In that chart, on page 12 of Liao,
5 would indicate that heat is, again, input
6 parameter; correct?

7 A Yes.

8 Q And would you understand that to be the
9 heat detection status variable that we discussed
10 earlier?

11 A Yes.

12 Q And turning to page 21 of Liao --
13 actually, let's go to page 20, page 20 of Liao.
14 Let me know when you're there, please.

15 A Okay.

16 Q Do you see a Claim 10 toward the middle of
17 page 20 of Liao?

18 A Oh, I'm on the wrong page. Yes.

19 Q Okay. In Claim 10 of Liao, there are two
20 output parameters at the end of that claim; right?

21 A Yes.

22 Q It goes into page 21. Sorry.

1 A Yep.

2 Q So you would agree that there's two output
3 parameters in Claim 10 of Liao?

4 A Yes.

5 Q And neither of the output parameters in
6 Liao Claim 10 would indicate whether the cow was
7 in heat; correct?

8 MR. HACKMAN: Objection. Form.

9 A As we discussed earlier, the -- from -- if
10 you look at the table on page 10, heat is an input
11 parameter. And so the output of Liao isn't --
12 doesn't have heat as an output; it has it as an
13 input.

14 Q (BY MR. LANDERS) Flipping ahead to
15 page 26 of Liao, looking at Claim 23. Please let
16 me know when you're there.

17 Sorry. I forgot one thing. If you can go
18 back to Claim 10. I apologize.

19 A Okay.

20 Q Specifically, Claim 10, line 27 of
21 page 20.

22 Liao Claim 10 includes a fifth input

1 parameter reflecting a heat detection

2 status; right?

3 A Yes.

4 Q And then moving ahead to page 26, line 21
5 through 22, Claim 23 of Liao also provides a heat
6 detection status as an input parameter; correct?

7 A Yes.

8 Q And then, again, Claim 23 has two output
9 parameters, and neither of them are heat
10 detection; right?

11 A No. One of them is ID and one of them is
12 insemination decision.

13 Q Okay. You can set Liao to the side.

14 And, Dr. Brown-Brandl, the court reporter
15 has handed you what's been marked in both IPR
16 proceedings as Exhibit 1023, which is US Patent
17 Number 5,568,788 to van den Berg.

18 Do you recognize this document?

19 A I do.

20 Q And did I accurately describe the patent
21 number and the au- -- inventor? I just want to
22 make sure you have the right document.

1 A Yeah, I have van den Berg here.

2 Q Okay. Thank you.

3 If you could turn to page 5, using the
4 exhibit numbering down at the bottom right. Let
5 me know when you're there, please.

6 A Page 5 of the exhibit number.

7 Q Right.

8 A Yep.

9 Q Where there will be a Column 2 at the
10 back.

11 A Column 1, 2. Yep.

12 Q Right. Exactly.

13 If you could look at Column 2, lines 1
14 through 8 of van den Berg, and I'd just like you
15 to confirm that you see a reference to "dead
16 time."

17 A Yes.

18 Q Are you familiar with the concept of dead
19 time?

20 A I am.

21 Q In your view, what is dead time?

22 A Dead time is from the time that the teat

1 cup is placed on the teat until milk is flowing.

2 Q Okay. And if you could flip one page
3 ahead to page 6 of the exhibit, and I'm looking at
4 Column 3, lines 24 through 27. Let me know when
5 you're there, please.

6 A Yep.

7 Q Is van den Berg, at Column 3, lines 24
8 through 27, accurately describing dead time, in
9 your view?

10 A Yeah, that's how I would define dead time.

11 Q Okay. And, to your knowledge, can dead
12 time be used as a factor in detecting illness in
13 an animal?

14 A There are times that dead time will change
15 with mastitis.

16 Q Are --

17 A And it could be other things, too.

18 Q So to be clear, dead time can be a factor
19 in detecting certain illnesses in an animal?

20 A Yes.

21 Q And if you could go over to Column 4, and
22 I'm looking at lines 20 through 24.

1 A Okay.

2 Q Starting with, (as read) One or more of
3 the parameters.

4 Do you see that?

5 A Yep.

6 Q Now, at van den Berg, Column 4, lines 20
7 through 24, does he say, (as read) One or more of
8 the parameters may be combined with the dead time
9 and analyzed by a computer. In doing so, to
10 achieve a higher accuracy, especially the
11 temperature of each of the flows of milk from the
12 various teats can be determined.

13 Do you see that?

14 A Yes.

15 Q And so van den Berg is describing that
16 parameters can be combined with dead time; right?

17 A Yes.

18 Q And then -- and, specifically,
19 van den Berg uses temperature of each of the flows
20 of milk from the various teats as one of the
21 parameters that could be combined with dead time
22 to achieve a higher accuracy; right?

1 A Yes.

2 Q And just to be clear, in that section of
3 text at Column 4, lines 20 through 24 of
4 van den Berg, van den Berg does not say that a
5 cow's internal temperature and milk yield should
6 be combined to achieve higher accuracy in
7 determining whether an animal is ill or in
8 heat; right?

9 MR. HACKMAN: Objection. Form. Excuse
10 me. Mischaracterizes the reference.

11 A So can you rephrase the question, because
12 I actually am not sure that I'm -- I'm -- yeah, if
13 you can rephrase the question or re-ask the
14 question.

15 Q (BY MR. LANDERS) In van den Berg,
16 lines -- strike that.

17 In van den Berg, Column 4, line 20 through
18 24, van den Berg is not saying to combine a cow's
19 internal temperature and milk yield to achieve a
20 higher accuracy; right?

21 MR. HACKMAN: Same objections.

22 A Van den Berg -- so if you start at the

1 beginning of that paragraph, (as read) According
2 to the invention, it is more reliable indication
3 of heat or illness can be obtained from the
4 parameters, including milk flow rate, temperature
5 of milk flow, milk yield, and number of times.

6 So it goes on. So van den Berg isn't
7 using cow internal temperature, but they are using
8 the -- the milk temperature at the teat cup, which
9 is the same as body temperature as it leaves -- as
10 it leaves the teat, it is the same temperature as
11 cow body temperature.

12 Q (BY MR. LANDERS) And so specifically at
13 4, lines 20 through 24, van den Berg is explaining
14 that you could combine certain parameters --
15 strike that.

16 At Column 4, lines 20 through 24 of
17 van den Berg, he's explaining that you can combine
18 temperature with dead time to improve
19 accuracy; correct?

20 MR. HACKMAN: Objection. Form.

21 A It is saying that you can use the
22 temperature and the dead time in a combined

1 equation.

2 Q (BY MR. LANDERS) And in that specific
3 section of van den Berg, Column 4, lines 20
4 through 24, he's not saying to combine dead time
5 or accuracy with milk yield; right?

6 MR. HACKMAN: Objection. Form.

7 A So he is measuring temperature of the milk
8 flow and -- so you have to go to the top of that
9 paragraph.

10 And he lists, (as read) Milk flow rate,
11 temperature of milk flow rate, milk yield, number
12 of times in a given period that the animal pays a
13 visit to the milking parlor, food quantity
14 consumed in the milking parlor.

15 And those -- those parameters can be
16 combined with dead time and analyzed by the
17 computer.

18 Q (BY MR. LANDERS) And in the next
19 sentence, van den Berg says that, (as read) To
20 achieve a higher accuracy, especially the
21 temperature of each of the flows of milk can be
22 combined with dead time to achieve a higher

1 accuracy; right?

2 A Yes.

3 Q Van den Berg is not saying there that you
4 should combine specifically milk yield with dead
5 time to achieve a higher accuracy; right?

6 MR. HACKMAN: Objection. Form.

7 A Milk yield is listed at the top in that
8 thing. And so he's saying one of those
9 parameters -- one or more of the parameters can be
10 combined with -- with dead time and temperature.

11 Q (BY MR. LANDERS) But in the sentence
12 where van den Berg is stating to achieve a higher
13 accuracy, he's discussing the use of temperature
14 in combination with dead time; right?

15 A I'm not sure that that's what he's saying.
16 I think temperature can be an added parameter in
17 that equation.

18 Q So you're not sure what van den Berg is
19 exactly trying to say there?

20 A I think van- --

21 MR. HACKMAN: Objection. Form.

22 A I think van den Berg is saying all these

1 parameters and temperature can be used to
2 determine a higher accuracy.

3 Q (BY MR. LANDERS) And temperature of the
4 milk flow was already listed as one of the above
5 parameters, though; correct?

6 A Yes.

7 Q And so, in the sentence where he's saying,
8 (as read) In doing so, to achieve a higher
9 accuracy, especially the temperature of each of
10 the flows of milk from the various teats can be
11 determined, he's discussing the inclusion of
12 temperature in combination with dead time to
13 achieve a higher accuracy; right?

14 A Yeah.

15 MR. HACKMAN: Objection. Form.

16 Q (BY MR. LANDERS) And in that sentence
17 specifically, van den Berg is not stating that one
18 would use milk yield in combination with dead time
19 specifically to achieve a higher accuracy; right?

20 MR. HACKMAN: Objection. Mischaracterizes
21 the document.

22 A So I -- as I'm reading this --

1 MR. LANDERS: If you could just stick to
2 form. That's getting really close to teaching
3 there.

4 A As I'm understanding this, if you look
5 at -- at the temperature at the teat cup itself,
6 you need to know dead time in order to know when
7 you should start taking temperature. Right?
8 Because you have to know when the milk is flowing
9 so you know that your temperature's accurate,
10 close in accurate body temperature.

11 Because when you put the teat cup on, it's
12 going to be ambient temperature or the temperature
13 of the solution that was used to -- to clean it.
14 When you put it on the teat, you have to know dead
15 time. So you have to know when the milk is
16 flowing so you get a good, accurate body
17 temperature reading.

18 Q (BY MR. LANDERS) So you would agree with
19 van den Berg that combining temperature with a
20 dead time could increase accuracy.

21 Is that fair to say?

22 A Yes.

1 Q And my question is whether van den Berg,
2 specifically in Column 4, lines 20 through 24, is
3 stating that one could combine milk yield with
4 dead time to achieve a higher accuracy.

5 MR. HACKMAN: Objection. Form.

6 A So in order to get accurate body
7 temperature readings of milk temperature, you need
8 to know that the milk is flowing. And if the milk
9 is flowing, then you can know what the body
10 temperature is.

11 Q (BY MR. LANDERS) Was that your answer?

12 A Yes.

13 MR. LANDERS: I object as nonresponsive.

14 Q (BY MR. LANDERS) I'm asking about milk
15 yield, and I'm asking specifically whether
16 van den Berg, at Column 4, lines 20 through 24, is
17 specifically stating that to achieve a higher
18 accuracy, one would combine the temperature and
19 milk yield.

20 A Can you clarify? The higher accuracy of
21 what?

22 Q Well, I'm -- I'm trying to get your

1 understanding of van den Berg. So you tell me.

2 A So if you go to the top of that paragraph,
3 (as read) According to this invention, is a more
4 reliable indication of heat or illness is to
5 obtain these -- and he lists out a lot of
6 parameters.

7 So he's looking at being able to determine
8 if an animal is sick or in heat based on these
9 parameters. And so he's using milk yield in a
10 function to determine heat or illness.

11 Q Right.

12 And, now, specifically at Column 4,
13 lines 20 through 24 of van den Berg, I'm asking if
14 van den Berg is stating that to achieve a higher
15 accuracy, that one would combine temperature and
16 milk yield specifically.

17 MR. HACKMAN: Objection. Form.

18 A So as I am reading this, he is -- he is
19 putting one or more of the parameters with dead
20 time, analyzing it by the computer, to achieve a
21 higher accuracy, especially in temperatures of
22 each flow of milk.

1 Q (BY MR. LANDERS) Right.

2 And so in that statement that van den Berg
3 makes at Column 4, lines 20 through 24, he does
4 not say, at that location in his patent, that
5 temperature and milk yield specifically should be
6 combined to achieve a higher accuracy; right?

7 MR. HACKMAN: Objection. Form.

8 A He lists several parameters, and then he's
9 saying that those can be combined with dead time.

10 Q (BY MR. LANDERS) And then in the next
11 sentence, he says, (as read) In doing so, to
12 achieve a higher accuracy, especially the
13 temperatures of each of the flows of milk from the
14 various teats can be determined.

15 And in that sentence, is he explaining
16 that one should combine temperature and milk yield
17 to achieve higher accuracy in determining whether
18 an animal is ill or in heat?

19 A I think he is -- I think he is
20 adding -- he is putting dead time so you know that
21 the temperature of the milk is actually the body
22 temperature of the animal.

1 Q So in the sentence that starts with "In
2 doing so," van den Berg is explaining a benefit of
3 including the temperature of each of the flows of
4 milk in his system for determining whether an
5 animal is ill or in heat; right?

6 A That's right.

7 Q He is not talking about specifically
8 combining temperature and milk yield to improve
9 illness detection or heat detection; right?

10 MR. HACKMAN: Objection. Form.

11 Q (BY MR. LANDERS) At that location?

12 A If you go to the top of that, actually,
13 the first sentence says -- you have to go clear
14 back to the top. And he lists out all of these
15 parameters. So milk yield and temperature are
16 listed in his first part of that paragraph that
17 goes back to -- back to his signal of heat or
18 illness. And then he is looking at dead time to
19 increase the accuracy of the body temperature
20 measured by milk temperature.

21 Q Right.

22 So in Column 4, lines 20 through 24, in

1 the sentence that starts "In doing so,"
2 van den Berg is explaining a way to improve the
3 temperature measurement; right?

4 A Is -- to impro- -- the dead time improves
5 temperature measurement, but he's using the
6 temperature of the milk flow, milk yield to
7 determine illness, and -- and heat.

8 Q When van den Berg is referring to "achieve
9 a higher accuracy," he's referring to the accuracy
10 of the temperature measurement.

11 Is that fair to say?

12 A When he is combining those things, he is
13 trying to improve the ac- -- that's how I
14 understand it on line -- I don't know -- 23,
15 especially of the temperature of each of the milk
16 flows. But he is using temperature and milk flow
17 and milk yield, all of those parameters, to
18 determine illness of an individual animal.

19 Q And just to clarify, in Column 4, line 23
20 of van den Berg, when he explicitly uses the
21 phrase "to achieve a higher accuracy," he is
22 referring to the accuracy of the temperature

1 measurement, right, in that sentence?

2 A When you read that sentence, (as read) For
3 determination of -- no, wait. Just a second. I'm
4 on the wrong line.

5 (As read) Especially -- yeah, his sentence
6 says, (as read) Especially the temperature of each
7 of the milk flows from various teats can be
8 determined.

9 Q So is van den Berg ambiguous about what he
10 means by "higher accuracy," or are you sure that
11 he's referring to a temperature measurement there?

12 MR. HACKMAN: Objection. Form.

13 A In this sentence, I think he is referring
14 to the temperature sensor.

15 Q (BY MR. LANDERS) So in that specific
16 sentence that starts with "In doing so,"
17 van den Berg is explaining a way that one could
18 achieve a higher accuracy of a temperature
19 measurement; yes or no?

20 A Yes, I believe that is correct.

21 MR. LANDERS: That's all I have for now,
22 but if I could take a break to check my notes --

1 MR. HACKMAN: Yeah.

2 MR. LANDERS: -- I'd appreciate it.

3 MR. HACKMAN: Yeah, I think we might have
4 some follow-up questions, too. So why don't we --
5 why don't we do, like, 15 minutes.

6 MR. LANDERS: Yeah, that sounds good.

7 (A recess was taken from 2:32 p.m.
8 to 3:09 p.m.)

9 MR. LANDERS: Back on the record.

10 Q (BY MR. LANDERS) Welcome back,
11 Dr. Brown-Brandl.

12 As before, I have to ask: Did you discuss
13 the substance of any of your testimony with your
14 counsel during the break?

15 A No, I did not.

16 MR. LANDERS: And with that, I pass the
17 witness for any redirect that you may have. And I
18 reserve the right to recross.

19 MR. HACKMAN: Thank you, Mr. Landers.

20 I'm going to hand the court reporter
21 Exhibit 1001 from the '885 IPR, which relates --
22 which is the US Patent Number 9,844,206.

1 THE COURT REPORTER: Okay. Do you want me
2 to hand it to the witness?

3 MR. HACKMAN: Yeah. And then -- there you
4 go.

5 MR. LANDERS: Thank you.

6 MR. HACKMAN: And then the second is the
7 patent from -- US Patent Number 8,823,515. And
8 it's Exhibit 1001 from the '885 IPR.

9 EXAMINATION

10 BY MR. HACKMAN:

11 Q All right. So, Dr. Brown-Brandl, you've
12 been handed Exhibit 1001, which is the
13 '206 patent.

14 Are you familiar with this document?

15 A I am.

16 Q And was this the document that you
17 reviewed for your declaration relating to the
18 '206 patent IPR?

19 A Yes, it is.

20 Q Okay. Could you turn to Column 18. And
21 we'll go to line 36 where it says, (as read) Enter
22 said sensed animal information retrieved from said

1 RFID device and said animal information stored in
2 said database as logical variables into at least
3 one logical expression.

4 Do you see that claim limitation?

5 A I do.

6 Q And is your understanding that that claim
7 limitation requires a specific logical expression?

8 MR. LANDERS: Objection. Leading.

9 A That -- that claim limitation, as in -- in
10 my own words, is that you take animal information
11 from a sensor on an animal and -- combined with
12 the RFID number, and it is -- and information
13 stored in a database, and you put that into a
14 logical expression. It doesn't state what sort of
15 equation; it just says one logical expression.

16 Q (BY MR. HACKMAN) As part of your work
17 towards preparing a declaration, did you review
18 the '206 patent?

19 A I did.

20 Q Okay. And do you recall whether the
21 '206 patent provided a logical expression that
22 included both sensed temperature from a cow and

1 milk information or days in milk information --

2 MR. LANDERS: Objection.

3 Q (BY MR. HACKMAN) -- into one logical
4 expression.

5 MR. LANDERS: Objection. Scope, form, and
6 leading.

7 A The patent itself says that we are going
8 to use animal information, and that has to be
9 combined with an RFID so we know which animal it
10 is, and it has to be in one logical expression.

11 The claim states that -- that both of them
12 need to be there, but it doesn't actually -- in
13 this '206 document doesn't actually show how they
14 are doing that or if they are actually combining
15 them in one logical expression.

16 Q (BY MR. HACKMAN) Okay. By the document
17 not showing actually how they combined those two
18 logical variables in one logical expression,
19 what -- what do you mean by that?

20 MR. LANDERS: Objection. Scope and form.

21 A That means that the information, like,
22 temperature can be one logical expression. Milk

1 can be one logical expression. They don't
2 necessarily have to be the -- in the same
3 equation. They can be two separate logical
4 expressions.

5 Q (BY MR. HACKMAN) Sorry. To clarify,
6 I'm -- I'm referring to the specification of the
7 patent.

8 Do you recall an example in the
9 specification where both milk information and
10 temperature information were combined into a
11 single logical expression?

12 MR. LANDERS: Objection. Scope and form.

13 A I don't recall that --

14 MR. LANDERS: And leading.

15 A I don't recall those -- those two being
16 combined in a single logical expression in this
17 patent.

18 Q (BY MR. HACKMAN) Okay. I think you can
19 set aside the '206 patent.

20 Next, I want to go back to -- it was
21 actually your declaration.

22 A Okay.

1 Q And if you can go to page --

2 MR. LANDERS: Is this the '206?

3 MR. HACKMAN: Yeah, the '206. Yeah.

4 We'll just do the '206.

5 Q (BY MR. HACKMAN) Page 38, paragraph 80.

6 And can you read out the paragraph

7 starting with "The system."

8 MR. LANDERS: Objection. Scope.

9 A Paragraph 80?

10 Q (BY MR. HACKMAN) That's right.

11 A Okay. And the sentence starting,

12 (as read) The system includes a data collection

13 unit connected to a number of animal-related

14 sensor means; i.e., sensors located in or on the

15 animal, implements related -- interrelated with

16 the animal such as milking apparatus.

17 Q Okay. And this sentence is referring to

18 which reference?

19 A Liao, Exhibit 1010.

20 Q Okay. Why don't we go to page 13 of the

21 Liao reference, which is Exhibit 1010.

22 A Okay. I'm looking for my Liao reference.

1 Q Yeah, it's PCT patent application. That's
2 it.

3 A Yep.

4 Q Okay. Why don't we turn to page 13.

5 And do you see the paragraph on page 13 of
6 Liao to which your declaration is citing?

7 A Yes.

8 Q Okay. So what's your understanding of
9 what this paragraph is describing?

10 MR. LANDERS: Objection. Scope.

11 A This -- this paragraph is talking about a
12 number of sensors that can be in or on the animals
13 or implement, such as, like, a robotic milker or a
14 milking cup, and it's all feeding data into their
15 data collection unit.

16 Q (BY MR. HACKMAN) And by "their data
17 collection unit," are you referring to the Liao
18 reference?

19 MR. LANDERS: Objection. Leading.

20 A Yeah, with the Data Collection Unit
21 Number 35 -- 135 -- sorry -- which is on the first
22 page figure.

1 MR. LANDERS: I need to object to the
2 scope to the previous question as well, please.

3 Q (BY MR. HACKMAN) So is this paragraph in
4 Liao providing a source of where dairy farm data D
5 comes from --

6 MR. LANDERS: Objection.

7 Q (BY MR. HACKMAN) -- in the Liao system?

8 MR. LANDERS: Objection. Scope, form, and
9 leading.

10 A Yeah. So if you look at the -- the
11 diagram on the first page, we're bringing the
12 small "d" with subscript 1 through "n." That's
13 all data that's feeding into their data collection
14 unit, either wired or wireless -- wirelessly.

15 Q (BY MR. HACKMAN) Do you recall when
16 counsel asked about the -- actually, strike that.

17 Let me go to the question here. Okay.

18 So do you recall when counsel asked you,
19 quote, and Liao does not describe the source of
20 where dairy farm data D comes from; right?

21 A Right.

22 Q Based on your review of page 13 in your

1 declaration, do you believe that Liao describes
2 where data D -- I'm sorry -- where dairy farm
3 data D comes from?

4 A According to my --

5 MR. LANDERS: Objection. Leading.

6 A -- my deposition [sic], while Liao doesn't
7 describe exactly the sensors that are used, my
8 paragraph 80 on page 130 -- or on 38 of my
9 deposition [sic], I'll just read from that.

10 (As read) The system includes data
11 collected from a number of animal-related sensors,
12 which is what is a quote from the Liao reference.

13 Q (BY MR. HACKMAN) Okay. Why don't we turn
14 to the Trevarthen reference. And that's
15 Exhibit 1005.

16 A Okay.

17 Q So do you recall counsel asking you a
18 question about whether you had studied the
19 entirety of the Trevarthen reference?

20 A Yes.

21 Q And do you recall what your answer was at
22 that time?

1 A I have read it, but I did not study it.

2 Q For the -- sorry. Strike that.

3 For the sections that you relied on in
4 your declaration, did you study those sections?

5 MR. LANDERS: Objection. Scope, form, and
6 leading.

7 A I did. I particularly paid a close
8 attention to the Cochrane Dairy, and the total
9 farm management, so chapters 5 and 6.

10 Q (BY MR. HACKMAN) And to confirm, you read
11 the remaining chapters, but you didn't -- you
12 didn't study them as intensely as you did the
13 chapters that you just named?

14 MR. LANDERS: Objection. Scope, form, and
15 leading.

16 A That is right. I read them, but I did not
17 study them.

18 Q (BY MR. HACKMAN) Did you consider
19 Trevarthen in its entirety in coming to your
20 opinions?

21 MR. LANDERS: Objection. Scope, form, and
22 leading.

1 A I did.

2 Q (BY MR. HACKMAN) All right. So the last
3 thing I want to do is -- we have an exhibit marked
4 1040 in both the '875 and '885 IPR proceedings.

5 MR. HACKMAN: Here's the '875.

6 (Exhibit 1040 marked.)

7 MR. HACKMAN: And here's the '885.

8 (Exhibit 1040 marked.)

9 MR. HACKMAN: Yes. Here you go.

10 MR. LANDERS: Are these the same?

11 MR. HACKMAN: And we'll represent these
12 are the same exhibits. They just are -- we did
13 two copies so that they would appear in both
14 proceeding.

15 MR. LANDERS: Got it.

16 Q (BY MR. HACKMAN) And so -- and I'll
17 represent that this is taken from the USPTO patent
18 center from the image file wrapper of the Laitinen
19 patent.

20 Do you recall --

21 MR. LANDERS: Just let me get an objection
22 in.

1 MR. HACKMAN: Sure.

2 MR. LANDERS: I'll take your
3 representation under advisement, but I do want to
4 object to the scope and to the authenticity of
5 these documents on the record.

6 Q (BY MR. HACKMAN) And, Dr. Brown-Brandl,
7 do you recall viewing this particular exhibit
8 before?

9 MR. LANDERS: Objection. Scope, form, and
10 leading.

11 A Yes, I have reviewed this document.

12 Q (BY MR. HACKMAN) Okay. And what is your
13 understanding of what this document is?

14 A This --

15 MR. LANDERS: Object to scope.

16 A This document is the patent application
17 for the Laitinen patent.

18 Q (BY MR. HACKMAN) Okay. And I'll also,
19 actually, mark -- let me see if I have a copy --
20 yes. Why don't we do this: Let's also include
21 Exhibit 1006. It's US Patent 7,059,275. It's the
22 Laitinen reference.

1 (Exhibit 1006 marked.)

2 Q (BY MR. HACKMAN) Dr. Brown-Brandl, is the
3 Laitinen reference -- Laitinen reference the
4 issued patent that you were referring to earlier
5 in your testimony today?

6 A This Laitinen patent, Exhibit 1006. And
7 we talked about that patent, and then we talked --
8 then I did refer to Exhibit 1040 in my -- in my
9 testimony today as well.

10 Q Okay. So why don't you take a moment and
11 turn to paragraph 7, beginning at line 35 of the
12 Laitinen patent.

13 A Column 7?

14 Q Yeah. Column 7, line 35 and 30 -- through
15 37.

16 A Okay. Yes.

17 Q And do you see the inverse function
18 x equals -- it's a little hard to see on this -- f
19 to the 1, parenthesis, y , comma, z , closed
20 parenthesis? Do you see that?

21 MR. LANDERS: Object to form.

22 A I do see that.

1 Q (BY MR. HACKMAN) And you referred earlier
2 to an inverse function during your testimony.

3 Is this the part of the issued patent that
4 you were referring to during that testimony?

5 MR. LANDERS: Objection. Leading.

6 A These are the lines that I was referring
7 to, yes.

8 Q (BY MR. HACKMAN) And was this where
9 you -- strike that.

10 Is this the function that you categorized
11 as having a typographical error in the issued
12 patent?

13 A Yes, this the -- the function that I was
14 referring to.

15 Q Okay. In Exhibit 1040, can you please
16 turn to page 14. And you can just read to
17 yourself lines 1 to 3.

18 A (Witness reads document.)

19 Q Are you ready?

20 A Yes. Sorry.

21 Q So lines 1 to 3 of page 14 of
22 Exhibit 1040, are they essentially the same as

1 lines -- sorry -- Column 7, lines 35 through
2 seven -- 37 of the 1006 patent?

3 MR. LANDERS: Objection. Scope, form, and
4 leading.

5 Q (BY MR. HACKMAN) Let me restate that
6 because I mucked that up. All right.

7 So let's start with page 14, lines 1
8 through 3. There's an inverse function.

9 Is this inverse function on page 14 of
10 Exhibit 1040 the same inverse function that, in
11 your opinion, that's in the '275 Laitinen-issued
12 patent?

13 MR. LANDERS: Objection. Scope, form, and
14 leading.

15 A It is not the same function. It is -- it
16 is really hard to see. But if you look very
17 closely, you can see there's a minus 1 in
18 Exhibit 1040 on line 1 wherein Exhibit 1006 on
19 Column 7 and line 36, if you look very closely, it
20 is missing a minus 1.

21 Q (BY MR. HACKMAN) So is your assessment
22 that there is an error in the issued '275 patent?

1 MR. LANDERS: Objection. Scope, form, and
2 leading.

3 A I would say there's a typographical error.

4 MR. HACKMAN: I think that's it. Just
5 give me a minute and go off the record. I think
6 that I got everything I need.

7 (A recess was taken from 3:29 p.m.
8 to 3:42 p.m.)

9 FURTHER EXAMINATION

10 BY MR. LANDERS:

11 Q Welcome back, Dr. Brown-Brandl. I just
12 have a few more follow-up questions. I appreciate
13 your patience today.

14 I would ask you to pull out Exhibit 1001,
15 which is the '206 patent that Mr. Hackman handed
16 you earlier.

17 Do you have that in front of you?

18 A I do.

19 Q Dr. Brown-Brandl, do you recall
20 Mr. Hackman asking you some questions about claim
21 language in Claim 1 of the '206 patent during your
22 redirect testimony today?

1 A I do.

2 Q Now, are you an expert in patent law?

3 A I am not an expert in patent law. I have
4 been learning over the last -- last couple months
5 about how claims and how inventions work.

6 Q But you're not an expert in analyzing the
7 meaning of patent claims in the context of the
8 patent specification, are you?

9 A I am not an expert, no.

10 Q Okay. You can set Exhibit 1001 to the
11 side.

12 My next questions involve Exhibit 1003,
13 which was your '206 patent declaration, and
14 Exhibit 1010, which is the Liao reference.

15 Please let me know when you have those two
16 documents in front of you.

17 A Okay. I have those two documents in front
18 of me.

19 Q Okay. And do you recall Mr. Hackman
20 asking you some questions about Liao, particularly
21 with respect to paragraph 80 of your '206
22 declaration?

1 A Yes.

2 Q Okay. And particularly in paragraph 80 of
3 your declaration, you refer to some sensors that
4 were allegedly discussed in Liao?

5 A Yes.

6 Q Now, to be clear for the record, during
7 your redirect in which you were asked questions by
8 Mr. Hackman, did you change your testimony from
9 earlier when you were answering my question
10 regarding whether Liao describes the source of
11 where dairy farm data D comes from?

12 MR. HACKMAN: Objection. Form.

13 A So I -- I don't believe I did. The --
14 Liao doesn't describe exactly the sensors to be
15 used. If you look at my deposition [sic], it
16 says, (as read) A number of animal-related
17 sensors, meaning sensors located in or on the
18 animal increments -- and implements, such as
19 milking apparatus. But they don't describe
20 exactly what sensors are being used.

21 Q (BY MR. LANDERS) So in your view, when
22 you were answering Mr. Hackman's questions, you

1 were not changing any of your testimony that you
2 provided to me earlier in the day?

3 MR. HACKMAN: Objection. Form.

4 A No. I -- I -- I didn't mean to change my
5 testimony if -- if it was not clear.

6 What I was saying is, this doesn't say
7 exactly what sensors are being used. It's just
8 saying that sensor data is coming in to this --
9 this support -- this dairy farm management support
10 tool, but it doesn't relate exactly what sensors
11 are being used.

12 Q (BY MR. LANDERS) So you stand by your
13 testimony you provided me today regarding Liao and
14 its source of where dairy farm data D comes from?

15 MR. HACKMAN: Objection. Form.

16 A Can I ask you to repeat my testimony so I
17 can make sure that I was -- that I was answering
18 it to the best of my ability?

19 Q (BY MR. LANDERS) So I don't have the
20 exact question I asked. I have the question that
21 Mr. Hackman asked.

22 Do you think that would help?

1 A Well, I'm not sure how I answered your
2 question.

3 My understanding of the system is that
4 they used randomly generated data and producer
5 answers to develop the -- the model. And then
6 they used on-farm data from a variety of sensors,
7 which they don't -- they don't include here, and
8 that same model to -- to make decisions.

9 Q And in your response to Mr. Hackman's
10 question, you testified that, (as read) While Liao
11 doesn't describe exactly the sensors used, my
12 paragraph 80 on page 130 describes data collected
13 from a number of animal-related sensors.

14 Does that sound right?

15 A Yes.

16 Q And so you'd agree that Liao doesn't
17 describe exactly the sensors that it uses to
18 acquire data; right?

19 MR. HACKMAN: Objection. Form.

20 A The -- in my -- in my declaration, I
21 state, (as read) The system includes data
22 collection unit connected to, quote, a number of

1 animal-related sensors means; i.e., sensors
2 located on or in animals or implements
3 interrelated with the animals, such as milking
4 apparatus.

5 And that comes from Liao, page 13, 9
6 through 7.

7 Q (BY MR. LANDERS) And do you stand by your
8 testimony that Liao doesn't describe exactly the
9 sensors used?

10 MR. HACKMAN: Objection. Form.

11 A Liao -- Liao could have a variety of
12 sensors going into the model.

13 Q (BY MR. LANDERS) Specifically, for
14 example, Liao does not describe a device that Liao
15 itself is purporting to be capable of detecting
16 heat; right?

17 MR. HACKMAN: Objection. Form.

18 A Liao describes sensors that can be
19 connected to their system by means of radio
20 optical or ultrasonic transmission sources.

21 Q (BY MR. LANDERS) And so Liao doesn't
22 specifically describe a sensor that would detect

1 heat; right?

2 MR. HACKMAN: Objection. Form.

3 Q (BY MR. LANDERS) Let me strike that and
4 ask a more clear question.

5 So Liao doesn't specifically describe a
6 sensor that would detect a heat detection status
7 for a cow; right?

8 MR. HACKMAN: Objection. Form.

9 A (Witness reads document.)

10 Just verifying.

11 I don't believe so.

12 Q (BY MR. LANDERS) And just for the record,
13 when you said "just verifying," you were looking
14 through the exhibit, 10- --

15 A 1010.

16 Q Okay. You can set Liao to the side, as
17 well as your declaration. And please pull out
18 Exhibit 1006 and Exhibit 1040.

19 Also, my last question got a little
20 muddled because I was starting to say
21 Exhibit 1010. So can I just re-ask that. Strike
22 that.

1 And just for the record, Dr. Brown-Brandl,
2 when you said "just verifying," you were looking
3 through the Exhibit 1010 known as Liao; right?

4 A I was.

5 Q Okay. And do you have Exhibit 1006 and
6 Exhibit 1040 in front of you?

7 A I do.

8 MR. LANDERS: And now that I've had a
9 chance to look at this document, I do also want to
10 just add an objection for the record that it
11 appears to be an incomplete document that's part
12 of a larger set.

13 Q (BY MR. LANDERS) Now, Dr. Brown-Brandl,
14 do you recall Mr. Hackman asking you some
15 questions about Laitinen, as well as Exhibit 1040?

16 A Yes.

17 Q Now, are you an expert in the patent
18 application process?

19 A I am not.

20 Q Are you familiar with the term "file
21 history"?

22 A I am. I have sat on a patent review

1 committee for when I worked at ARS.

2 Q And what's your understanding of what a
3 file history is?

4 A Not -- that -- my understanding -- and
5 it's probably an incomplete understanding -- is
6 that when you file a patent, it goes through
7 several reviews and typeset, and then you review
8 it again. And...

9 Q And would it make sense to you if I said
10 that the file history would be a collection of
11 several documents that could reflect that
12 back-and-forth review that you were just referring
13 to?

14 A Yes.

15 Q And so it would not be your understanding
16 that Exhibit 1040 is the entire file history for
17 Laitinen; right?

18 A That, I -- I do not know.

19 Q Did you review the entire file history for
20 the Laitinen patent application?

21 A I reviewed this document, doc- -- and I'm
22 referring to Exhibit 1040. And I reviewed

1 Exhibit 1006.

2 Q In your view, is it possible that a patent
3 application itself could include a typo?

4 MR. HACKMAN: Objection. Form. Outside
5 the scope.

6 A Being somebody that writes scientific
7 journal articles and submits them for publication,
8 do typos happen? Yes, typos happen. And typos
9 happen in galley proofs and that happens as well.

10 Q (BY MR. LANDERS) What are galley proofs?

11 A Galley proofs are when we submit a
12 publication, it comes back typeset, and we have to
13 review it, the typeset version of our paper, and
14 we have to approve the typeset version before it
15 goes to publication.

16 And so it -- a galley proof -- I sort of
17 accredit it to when this was typeset, it would've
18 been sent back to the patent -- patent owner or
19 the author, and they would've looked through it
20 and -- and approved it.

21 Q Do you have personal knowledge of the
22 process by which the Laitinen team of inventors

1 applied for this patent?

2 A I do not.

3 Q So you don't know any review they may have
4 undertaken for submitting their
5 application; right?

6 A I do not.

7 Q And you don't know whether you reviewed
8 the entire file history for Laitinen; right?

9 A I reviewed these two documents.

10 Q So in -- strike that.

11 And you came to a conclusion that the US
12 Patent 7,059,275 that's Exhibit 1006 contains a
13 typo in Column 7 related to the inverse
14 function; right?

15 A If you look at the Exhibit Number 1040 and
16 you can see a minus 1 in that -- in that same
17 sentence -- and I am referring to the sentence in
18 1040 that's at the top of page 14 in that exhibit.
19 That's -- that's the original page number, not the
20 exhibit number -- and you compare it to the exact
21 sentence that is in Exhibit Number 1006 in
22 Column 7, line 35, and you read those word for

1 word, it is the same except for it is missing the
2 minus 1, which is -- in all respect to the
3 typesetter, it is difficult to see the minus 1 in
4 the 1040 document.

5 Q Did you review any other documents other
6 than Exhibit 1040 and Exhibit 1006 in determining
7 whether the patent Exhibit 10000 -- strike that.

8 Exhibit 1006 has a topographical error?

9 A No. I reviewed these two documents, which
10 is the 1040 and the 1006.

11 Q So the only evidence you reviewed with
12 respect to the possible typographical error in
13 Column 7 of Exhibit 1006 is Exhibit 1006 itself
14 and Exhibit 1040; right?

15 A That is true.

16 Q And it's your opinion that the Laitinen --
17 strike that.

18 It's your opinion that the Laitinen
19 patent, which issued as US Patent Number 7,059,275
20 by the United States Patent Office, is the
21 document that has the typographical error and not
22 the patent application?

1 A Right. And I came to that conclusion
2 because it says inverse function, which should
3 have a minus 1, and this one is missing a minus 1
4 where here it says an inverse function and has a
5 minus 1, but it's difficult to see.

6 Q And you reviewed no other evidence coming
7 to that conclusion; right?

8 A I did not.

9 Q And is there any testimony -- strike that.
10 Is there any testimony that you provided
11 today that you would like to change at this time?

12 A There was one -- the last question that
13 you -- we were talking about --

14 Q I'll withdraw the question.

15 A Can I finish my answer or...

16 Q My question was: Do you stand by all of
17 your testimony that you provided today?

18 A I do. There was one clarification I would
19 like to make, if that --

20 Q Go ahead.

21 A Is that okay?

22 Q Go ahead.

1 A When we were talking about van den Berg,
2 which is Exhibit 1023 -- let me find that -- and
3 you were asking me about these various -- so on
4 the top of Column -- or in Column 4, Exhibit 1023,
5 it's the second full sentence, starts -- or the
6 second full paragraph, starts on line -- I think
7 it's 13, 12 or 13, (as read) According to the
8 invention, more reliable indications of heat or
9 illness is obtainable from parameters.

10 And it lists a whole bunch of parameters.
11 And then you were -- you were asking me about a
12 sentence down below, which says, (as read) In
13 doing so, to achieve higher accuracy, especially
14 in temperatures, each of the milk flow -- they're
15 using dead time to increase the accuracy.

16 And I would like to clarify that dead time
17 is going to increase the -- the accuracy of the
18 temperature reading, which is, in turn, going to
19 increase the accuracy of heat and illness if you
20 don't have an accurate temperature going into that
21 equation. And I don't think I made that very
22 clear.

1 And if you look at my declaration on
2 page 91 and -- 90 and 91, paragraph 188, the end
3 of that paragraph, I -- I make that clear here.

4 Q Right.

5 And just to clarify, in the sentence in
6 Column 4, line 22 of van den Berg that starts
7 with, "In doing so. "

8 Do you see that sentence?

9 A Yep. "In doing so."

10 Q When van den Berg, in this sentence, is
11 saying, quote, (as read) To achieve a higher
12 accuracy, end quote, he is referring specifically
13 to achieving a higher accuracy of the temperature
14 and not...

15 A But if you achieve a higher accuracy in
16 temperature, it will achieve a higher accuracy in
17 illness detection.

18 Q Right.

19 But Dr. Brown-Brandl, what I'm trying to
20 understand is your interpretation of this
21 sentence.

22 A So --

1 Q I understand your clarification, but if
2 you could just answer my question, please, and --
3 and only the question that I've asked.

4 So let me just rephrase the question and
5 try and make it as clear as I can.

6 In Column 4, starting at line 22, where
7 van den Berg says, "In doing so," do you see that
8 sentence?

9 A I do.

10 Q And then after van den Berg says, "In
11 doing so," he uses the phrase "to achieve a higher
12 accuracy."

13 Do you agree?

14 A I do.

15 Q And when van den Berg says "to achieve a
16 higher accuracy," the accuracy he's referring to
17 is the accuracy of temperature; right?

18 A I am going to refer to my declaration on
19 page 91 in paragraph 188, the ending of that
20 paragraph. And he's referring to making sure that
21 you have good data coming in so you can combine
22 temperature and milk yield to -- to achieve -- to

1 get to if an animal is sick or not.

2 Q And did -- did you provide this
3 clarification on this question after reviewing
4 your declaration during a break?

5 A I did.

6 Q Okay. So before you reviewed your
7 declaration, I asked you to review this excerpt
8 from van den Berg, and you stated that the higher
9 accuracy was referring to the temperature.

10 Do you recall that?

11 A So during the break, I reviewed this
12 paragraph, and I reviewed my declaration both, and
13 I -- and I reread them several times and spent
14 time thinking about it and really trying to
15 understand exactly what this was saying and also
16 referring to my declaration. And so I'll stand by
17 what I put in the declaration.

18 Q And do you stand by what you testified to
19 me earlier?

20 A So I'm adding a clarification that that
21 accuracy of the temperature is important, and dead
22 time would increase that accuracy, but the

1 accuracy of the temperature is absolutely critical
2 to determining whether the animal is sick or not.

3 Q And just to be clear, in Column 4,
4 lines 20 through 24 that we've been discussing,
5 van den Berg does not say that specifically milk
6 yield may be -- strike that.

7 In -- in lines 20 through 24 of Column 4
8 of van den Berg, van den Berg is not referring to
9 a higher accuracy of milk yield; right?

10 MR. HACKMAN: Objection. Form.

11 A So if you read this whole paragraph, he's
12 really trying to achieve a higher accuracy in
13 detecting heat and illness. And so he goes
14 through a whole slew of -- or a whole list of
15 parameters. And then one or more of the
16 parameters may be -- may be combined with dead
17 time. In doing so, this will achieve a higher
18 accuracy.

19 Q (BY MR. LANDERS) But in the sentence that
20 van den Berg says, (as read) In doing so, to
21 achieve a higher accuracy, in that specific
22 sentence, he's referring to the accuracy of

1 temperature, which you say, in turn, improves the
2 accuracy of illness detection, but in that
3 sentence, he's referring to the accuracy of
4 temperature; right?

5 A He is referring to -- to temperature, but
6 you have to have accurate temperature in order to
7 determine whether an animal is ill.

8 Q Right.

9 And in line 22 through 24 in the sentence
10 that starts with "In doing so," van den Berg is
11 not explaining that you should combine temperature
12 and milk yield to achieve higher accuracy.

13 Higher accuracy there is specifically
14 referring to temperature; right?

15 A So in that sentence, but in the context of
16 the whole paragraph, it -- you have to know dead
17 time in order to achieve high accuracy in illness
18 and heat.

19 Q But when van den Berg is using the words,
20 quote, higher accuracy, end quote, in that
21 sentence, he's referring specifically to
22 temperature; yes or no?

1 MR. HACKMAN: Objection. Form.

2 A He is -- he's referring to -- to the
3 temperature, but you have to take that in the
4 whole context of the paragraph.

5 Q (BY MR. LANDERS) Right. And I understand
6 that you've made that clarification, but I do want
7 to understand.

8 It sounds like this is an ambiguous
9 sentence, then, because you've told me earlier
10 that you've said that he's talking about
11 temperature there and now you're backpedalling.

12 So I'm trying to understand your
13 understanding of this specific sentence in
14 van den Berg, what -- what he's referring to when
15 he says "higher accuracy."

16 MR. HACKMAN: Objection. Argumentative.

17 Q (BY MR. LANDERS) So my question is: In
18 the sentence in van den Berg, in Column 4 that
19 starts with "In doing so," when van den Berg says,
20 quote/unquote, higher accuracy, he's referring to
21 accuracy of temperature specifically; right? Yes
22 or no?

1 MR. HACKMAN: Objection. Form.

2 Argumentative.

3 A So -- so in the sentence, he is referring
4 to temperature. But like I stated before, if you
5 don't have -- he's saying that you have to have
6 dead time in order to determine the accurate --
7 accuracy of the milk temperature to get back to
8 exactly body temperature, and you have to have
9 body temperature to improve the accuracy of
10 detecting heat or illness.

11 So that -- that sentence -- so that's why
12 I was reviewing it over the break, is really
13 trying to understand if it's -- in what context
14 that he's talking about in this sentence.

15 Q (BY MR. LANDERS) Right.

16 And in that sentence, the word "accuracy"
17 is referring to getting a more accurate
18 temperature to improve illness and not
19 specifically the combination of temperature and
20 milk yield to improve accuracy of illness
21 detection; right?

22 MR. HACKMAN: Objection. Form. Asked and

1 answered.

2 A That's right. But if you read my
3 deposition [sic], it said that one or more of the
4 parameters, including temperature and milk yield,
5 may be combined to achieve a higher accuracy in
6 determining whether the animal is ill or in heat.

7 And so I think that -- that whole
8 paragraph is talking about how you can take
9 information from this teat cup and how you can use
10 it to determine an animal's status.

11 Q (BY MR. LANDERS) Right.

12 And in your paragraph 188, you bracketed
13 the words "including temperature and milk
14 yield"; right? So you chose to include the word
15 "milk yield" in that sentence; right?

16 A Yeah. It is included in his paragraph up
17 above, (as read) Milk flow, milk yield, number of
18 times visited.

19 So dead time is also important in milk
20 yield, because it's a -- and more -- the rate of
21 flow and the total yield and the temperature of
22 the...

1 Q And the word "accuracy" in Column 4 is
2 referring to temperature specifically; right?

3 MR. HACKMAN: Objection. Form. Asked and
4 answered. Mischaracterizes.

5 Counselor, she's -- I know you're not
6 getting the answer you want, but, I mean, we've
7 been around this circle over and over now.

8 MR. LANDERS: These are nonresponsive
9 answers, so I'm re-asking.

10 MR. HACKMAN: She's told you it's the
11 context of the paragraph.

12 MR. LANDERS: These are speaking
13 objections.

14 A Yeah, I'm talking about this entire
15 paragraph. That sentence might be referring to
16 temperature, but you have to take it in context of
17 the whole paragraph.

18 Q (BY MR. LANDERS) But that sentence itself
19 is referring to temperature; right?

20 MR. HACKMAN: Objection. Form. Asked and
21 answered.

22 A This -- this sentence is referring to

1 especially in temperature, but it doesn't
2 exclusively eliminate anything else.

3 Q (BY MR. LANDERS) All right.

4 MR. LANDERS: I'll pass the witness.

5 MR. HACKMAN: We have nothing further.

6 THE COURT REPORTER: Mr. Hackman, do you
7 need to order a copy of the transcript?

8 MR. HACKMAN: Yes.

9 (Deposition concluded at 4:15 p.m.)
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1 CERTIFICATE OF SHORTHAND REPORTER

2 I, CANDICE ANDINO, Certified Shorthand Reporter
3 within and for the State of Texas do hereby certify:

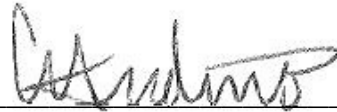
4 That TAMI M. BROWN-BRANDL, Ph.D., the witness
5 whose deposition is hereinbefore set forth, was duly
6 sworn by me before the commencement of such deposition
7 and that such deposition was taken before me and is a
8 true record of the testimony given by such witness.

9 I further certify that the adverse party,
10 SMAXTEC INC. and SMAXTEC ANIMAL CARE GMBH were
11 represented by counsel at the deposition.

12 I further certify that the deposition of
13 TAMI M. BROWN-BRANDL, Ph.D., occurred at the offices
14 of DECHERT, LLP, 515 Congress Avenue, Suite 1400,
15 Austin, Texas 78701, on Wednesday, January 29, 2025,
16 commencing at 8:52 a.m. to 4:15 p.m.

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

1 IN WITNESS WHEREOF, I have hereunto set my
2 hand this 5th day of February, 2025.

3
4
5 
6 _____

7 CANDICE ANDINO

8 Texas CSR No. 9332, RMR
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