UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FORESIGHT DIAGNOSTICS, INC., Petitioner,	No. IPR2023-00224; IPR2023-00317
VS.	
PERSONALIS, INC, Patent Owner.	U.S. Patent Nos. 11,384,394; 11,408,033

_____/

CONFIDENTIAL VIDEOTAPED DEPOSITION OF JOHN WEST

DECEMBER 8, 2023

Pages 1 - 176

Reported by:
R. Chayo Ayon,
CSR No. 12372
Job No. 6319931

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FORESIGHT DIAGNOSTICS, INC., Petitioner,	No. IPR2023-00224; IPR2023-00317
VS.	
PERSONALIS, INC, Patent Owner. _____/	U.S. Patent Nos. 11,384,394; 11,408,033

Videotaped deposition of JOHN WEST, taken before R. Chayo Ayon, a Certified Shorthand Reporter for the State of California, commencing at 8:21 a.m., Friday, December 8, 2023, at Weil Gotshal & Manges, LLP, 201 Redwood Shores Parkway, Redwood City, California 94065 before R. Chayo Ayon, CSR No. 12372.

Foresight EX1222
Foresight v Personalis
IPR2023-00317

APPEARANCES:

COUNSEL FOR PETITIONER
NAINI P.C.
2632 Wilshire Blvd.
Suite 268
Santa Monica, California 90403
BY: AMIR NAINI, ESQ.
310.592.3030
Amir@nainipc.com
-- AND --
IRELL & MANELLA LLP
1800 Avenue of the Stars
Suite 900
Los Angeles, California 90067
BY: ALAN HEINRICH, ESQ.
310.203.7668
AHeinrich@irell.com
BY: ANDREW KRAUSE, ESQ. (Appearing Electronically)
Akrause@irell.com
310.203.7668

COUNSEL FOR PATENT OWNER
KNOBBE MARTENS
3579 Valley Centre Drive
Suite 300
San Diego, CA 92130
858.707.4000

Foresight EX1222
Foresight v Personalis
IPR2023-00317

BY: NATHANIEL LUMAN, PH.D., ESQ.
858.707.4000
Nate.luman@knobbe.com
-- AND --
IN-HOUSE COUNSEL
STEPHEN MOORE
Stephen.moore@personalis.com

THE VIDEOGRAPHER:
CAMERON TUTTLE

---o0o---

Foresight EX1222
Foresight v Personalis
IPR2023-00317

I N D E X

WITNESS	PAGE
WEST, JOHN	
EXAMINATION BY MR. HEINRICH	9
EXAMINATION BY MR. LUMAN	170
EXAMINATION BY MR. HEINRICH	171

---o0o---

Foresight EX1222
Foresight v Personalis
IPR2023-00317

E X H I B I T

NUMBER	DESCRIPTION	PAGE
Exhibit 2032	Declaration	12
Exhibit 2038	Google calendar update for a "Dev Group Weekly Meeting" dated May 3rd from 2:00 to 4:30 p.m.	22
Exhibit 2041	E-mail to Carol Tellis with the subject "J. West board slides, with one slide revised, Number 8 of 14	50
Exhibit 2046	E-mail sent January 6, 2012	118
Exhibit 2063	E-mail, June 11, 2012	76
Exhibit 2084	E-mail to Carol Tillis on September 4, 2012, Subject, "Personalis Board Meeting Tomorrow"	130
Exhibit 2098	E-mail sent to Rich Chen and Carol Tillis Friday, October 19, 2012	154
Exhibit 2099	E-mail, November 1, 2012, from John West to Carol Tillis	134
Exhibit 2112	Slide Deck Presentation	56
Exhibit 2114	Individual Genome Sequencing Report	36
Exhibit 2122	PLOS Genetics Article	39

---o0o---

Foresight EX1222
Foresight v Personalis
IPR2023-00317

PROCEEDINGS

REDWOOD CITY, CALIFORNIA

FRIDAY, DECEMBER 8, 2023

THE VIDEOGRAPHER: Good morning. We are going on the record. The time is 8:21 a.m. on December 8, 2023. 08:20:46 08:20:49 08:20:55

Please note that the microphones are sensitive, and they pick up whispering and private conversations. 08:20:56 08:20:58 08:21:02

Please mute your phones at this time. Audio and video recording will continue to take place unless all parties agree to go off the record. 08:21:03 08:21:06 08:21:09

This is Media Unit 1 for the video recorded deposition of John West, taken by counsel for the petitioner, in the matter of "Foresight Diagnostics, Inc., versus Personalis, Inc.," filed in the United States Patent and Trademark Office, Case Number IPR 2023-00224. 08:21:11 08:21:14 08:21:17 08:21:21 08:21:26 08:21:31

The location of the deposition is 201 Redwood Shores Parkway, Redwood Shores, California 94065. 08:21:39 08:21:43 08:21:48

My name is Cameron Tuttle, representing Veritext, and I'm the videographer. The court reporter is Rosario Ayon also from Veritext. 08:21:51 08:21:55 08:21:56

Foresight EX1222
Foresight v Personalis
IPR2023-00317

I am not authorized to administer an oath. 08:22:00
I'm not related to any party in this action nor am I 08:22:05
financially interested in the outcome. 08:22:06
If there are any objections to the 08:22:08
proceeding, please state them at the time of your 08:22:10
appearance. 08:22:13
Counsel and all present will now state their 08:22:13
appearances and affiliations for the record beginning 08:22:15
with the noticing attorney. 08:22:19
MR. HEINRICH: Alan Heinrich of Irell and 08:22:19
Manella on behalf of Petitioner, Foresight 08:22:22
Diagnostics, and with me is cocounsel also for 08:22:25
Foresight, Amir Naini of Naini IP. 08:22:31
MR. LUMAN: My name is Nate Luman. I'm from 08:22:34
the law firm of Knobbe Martens. I represent 08:22:36
Personalis in this matter. I am joined by Steve Moore 08:22:39
who is from Personalis. 08:22:40
THE VIDEOGRAPHER: Will the court reporter 08:22:46
please swear in the witness. 08:22:48
THE REPORTER: Raise your right hand. 08:22:48
In the testimony you're about to give, do you 08:22:48
solemnly swear to tell the truth, the whole truth, and 08:22:48
nothing but the truth? 08:22:58
THE WITNESS: I do. Sorry. I do. 08:22:58
THE REPORTER: Thank you. 08:22:58

Foresight EX1222
Foresight v Personalis
IPR2023-00317

JOHN WEST, 08:22:58

was called as a witness on behalf of the Petitioner 08:22:58

and who, having been duly sworn, was thereupon 08:22:58

examined and testified as follows: 08:23:05

EXAMINATION 08:23:05

BY MR. HEINRICH: 08:23:05

Q. Good morning, Mr. West. 08:23:06

A. Good morning. 08:23:07

Q. We met just a moment ago, but again my name 08:23:08

is Alan Heinrich, and I represent folks at Foresight 08:23:11

Diagnostics. 08:23:11

Do you understand you've taken an oath to 08:23:17

answer my questions truthfully and completely today? 08:23:20

A. Yes. 08:23:22

Q. Do you understand it's the same oath you 08:23:23

would take if you were testifying in front of a judge 08:23:25

or a jury? 08:23:28

A. That's correct, yes. 08:23:29

Q. Well, do you understand it has all the 08:23:30

solemnity of an oath that you take if you were 08:23:32

testifying in court in front of a judge or jury? 08:23:36

A. Yes. 08:23:38

Q. Is there any reason why you can't give your 08:23:39

best and truthful testimony today? 08:23:41

A. No. 08:23:42

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. Have you been deposed before? 08:23:43

A. Yes, once quite a few years ago. 08:23:47

Q. What was the context of that? 08:23:50

A. I was the CEO of a company named "Celexa." 08:23:52

We had acquired a -- Celexa had been a British 08:23:56

company. We acquired an American company here in 08:24:01

Hayward, California, and we were sued by another 08:24:04

company about a patent that had been filed something, 08:24:08

like, ten years earlier that we knew nothing about 08:24:13

until it happened. 08:24:17

It was to do with somebody who had been an 08:24:18

employee years earlier, but the patent turned out to 08:24:21

be important for their technology, and so there was 08:24:25

litigation about that that was ultimately settled in 08:24:29

our favor. 08:24:33

Q. And you testified once in that matter? 08:24:35

A. I only recall being deposed once in that 08:24:39

matter. 08:24:43

Q. So you're familiar with the deposition 08:24:44

process in general? 08:24:46

A. I would say in general. It's -- and I have 08:24:48

had some preparation sessions with Personalis counsel. 08:24:52

So I think they have explained the process to me. 08:24:56

I would say my prior deposition was over ten 08:24:59

years ago, and it was only once. It was, actually, 08:25:02

Foresight EX1222
Foresight v Personalis
IPR2023-00317

held at my house. So this is a little different 08:25:06
circumstance. So if there is something that we need 08:25:08
to do differently, if you let me know, that would be 08:25:10
fine. 08:25:13
Q. Nothing different at all. 08:25:14
So what did you do in particular to prepare 08:25:17
for the deposition? 08:25:20
A. I had a number of meetings with Nate Luman 08:25:21
and Steve Moore, and I reviewed some documents. 08:25:26
Q. Approximately how long did those meetings 08:25:32
last for? 08:25:35
A. So we had a total of four meetings. There 08:25:37
were three meetings last week, which were by Zoom, and 08:25:40
each of those lasted approximately two hours, and then 08:25:46
we had a fourth meeting in person this week on 08:25:50
Tuesday, and that lasted up, maybe, approximately, 6 08:25:57
or 7 hours. 08:26:01
Q. Did you review any documents as part of those 08:26:02
meetings? 08:26:11
A. Yes, and I mentioned I had reviewed some 08:26:12
documents, yes. 08:26:14
Q. Did you review any documents that are not 08:26:15
exhibits in this proceeding? 08:26:18
A. If there is a document that -- I think we 08:26:22
will -- may want to raise later that is a publication 08:26:25

Foresight EX1222
Foresight v Personalis
IPR2023-00317

from my group, a scientific publication from back in 2008, and we can talk about that whenever you'd like. It was about the first time that my group sequenced a human genome using the Celexa technology. 08:26:28 08:26:33 08:26:41 08:26:46

Q. All right. Did you review your declaration in preparation for your deposition today? 08:26:53 08:26:55

A. Yes. 08:26:57

Q. So let's talk in general about your declaration. It's Exhibit 2032 in your binder. 08:26:57 08:27:01

THE REPORTER: 2032? 08:27:08

MR. HEINRICH: Yes. 08:27:11

(Exhibit 2032 was marked for identification.) 08:27:13

THE WITNESS: I'm open to the first page of it. 08:27:13 08:27:16

BY MR. HEINRICH: 08:27:16

Q. Okay. So did you write your declaration? 08:27:16

A. My declaration was drafted on a collaborative basis with the two attorneys who are present here today. 08:27:20 08:27:23 08:27:27

Q. Can you explain how that collaboration worked? 08:27:28 08:27:32

MR. LUMAN: I'll just caution the witness not to reveal any privileged communication that took place between himself and his counsel. 08:27:32 08:27:34 08:27:38

THE WITNESS: I would say that -- I'll give 08:27:43

Foresight EX1222
Foresight v Personalis
IPR2023-00317

you a brief summary of it, and then you can decide if you need more information than that. 08:27:47 08:27:49

I would say I'm not an attorney, and so I wouldn't know how to structure a declaration, and so our counsel has helped with saying, "Here's how a declaration, in general, would be organized for something like this." 08:27:52 08:27:55 08:27:59 08:28:03 08:28:05

So they help with the framing of that. 08:28:07

In addition, there was some research that led to identifying a number of documents, which are exhibits to the declaration, and some of those were obtained, I believe, by counsel working with Personalis's IT staff to look up e-mails from more than ten years ago. That kind of thing. They help identify some of those documents. 08:28:09 08:28:13 08:28:17 08:28:21 08:28:24 08:28:31 08:28:33

I no longer have access to Personalis e-mails. So I'm not able to do that searching, but then they brought that together, and there are parts of the declaration that I -- where I was the original person writing them. There were other parts that were drafted by counsel. I reviewed all of the parts, and the parts that I wrote were also reviewed by counsel. 08:28:35 08:28:38 08:28:41 08:28:46 08:28:48 08:28:51 08:28:55

We had a number of meetings to discuss the various parts of the declaration as it was being developed and worked on it together. 08:29:00 08:29:04 08:29:07

Foresight EX1222
Foresight v Personalis
IPR2023-00317

At the end it is -- although it was developed as a collaborative effort, which I think is normal, it is my declaration, not anybody else's, and I have signed it. 08:29:11 08:29:13 08:29:17 08:29:20

BY MR. HEINRICH: 08:29:21

Q. So Mr. Moore is the current general counsel at Personalis; correct? 08:29:22 08:29:25

A. Yes, I believe so. 08:29:28

Q. And what was Mr. Moore's role in the collaboration that resulted in your declaration? 08:29:29 08:29:34

MR. LUMAN: I'm going to instruct the witness not to answer that question. That calls for privileged communications. 08:29:38 08:29:40 08:29:41

BY MR. HEINRICH: 08:29:42

Q. Were you shown any exhibits during the course of this collaboration that you didn't really recollect? 08:29:43 08:29:44 08:29:47

A. I don't think so. These are mostly documents that I was involved with. 08:29:50 08:29:54

The main documents that I might not have recalled specifically were things like Google calendar invitations. I don't remember every Google calendar invitation from ten years ago. 08:29:56 08:30:00 08:30:06 08:30:11

But the documents that have more technical substance were generally things that I was involved 08:30:13 08:30:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

with at the time, either that I wrote them or that people who reported to me, wrote them, and so I was generally familiar with those documents. 08:30:18 08:30:20 08:30:23

Q. Which parts of the declaration did you write in the first instance? 08:30:25 08:30:28

A. I don't remember the specific list. If there was specific portions that it's important to know, "Mr. West, did you write this portion," I guess we could look at them part by part, but I don't know that I could tell you. It was a process that took a series of meetings over an extended period of time, and we would have to look literally at section by section to answer that. I don't know how important it is. 08:30:30 08:30:34 08:30:38 08:30:41 08:30:44 08:30:47 08:30:51 08:30:54

Q. Were there certain subject areas where you took the lead in drafting and others where counsel took the lead in drafting? 08:30:56 08:30:59 08:31:03

A. I would say that I have -- I don't have any expertise in the legal field. So to the extent that there are portions of the document that are -- that relate to legal matters or -- or legal points, those would obviously be things I would need help from counsel on. 08:31:06 08:31:09 08:31:12 08:31:18 08:31:23 08:31:26

To the extent that there are things that are more technological or that have to do with the business matters of Personalis, I know more about 08:31:27 08:31:29 08:31:33

Foresight EX1222
Foresight v Personalis
IPR2023-00317

those, and I founded the company and was involved the whole period of time. So I would have had more to say about those. 08:31:37 08:31:40 08:31:42

Q. Do you recall which areas involving legal issues? Some examples that counsel took the lead in? 08:31:44 08:31:50

MR. LUMAN: I'm going to instruct the witness not to answer that question. It calls for privileged communication. 08:32:03 08:32:05 08:32:06

MR. HEINRICH: It's following up on his answer. He said that counsel wrote sections involving legal issues, but what particular legal issues do you have in mind? 08:32:06 08:32:06 08:32:07 08:32:11

MR. LUMAN: Same instructions. 08:32:12

MR. HEINRICH: I don't think that's proper. 08:32:15

MR. LUMAN: I mean, you're asking questions that go deep into what occurred between Mr. West and his counsel during his declaration. That's not a proper line of questioning. 08:32:16 08:32:18 08:32:22 08:32:25

MR. HEINRICH: I don't agree with your characterization. 08:32:27 08:32:29

BY MR. HEINRICH: 08:32:29

Q. How long, overall, did the process take to draft the declaration? 08:32:30 08:32:32

A. I'm trying to remember. It seems to me that it might have been spread over a period of 08:32:34 08:32:42

Foresight EX1222
Foresight v Personalis
IPR2023-00317

approximately a month. 08:32:45

To provide some explanation for that, during 08:32:46
the time that the declaration was being prepared, I 08:32:49
was living in England. 08:32:53

My wife and I bought a second home in 08:32:54
Cambridge, England. So that's very nice, but it's 08:32:57
also eight hours time difference from California. 08:33:01

So that limited the times that were available 08:33:03
for us to be able to have meetings. So I don't know 08:33:06
whether that's a long time or a short time to prepare 08:33:10
a declaration, but -- but it was probably a month or 08:33:12
two, something like that. I don't remember exactly. 08:33:16

Q. Many hours? 08:33:19

A. Yes. 08:33:20

Q. Over the course of those many hours -- well, 08:33:20
first of all, in reviewing your declaration for your 08:33:26
deposition, did you notice any errors or mistakes or 08:33:33
anything at all that you would like to change in your 08:33:40
declaration? 08:33:43

A. Yes. There is one paragraph that I think we 08:33:43
probably need to delete from the declaration. There 08:33:46
was an error that -- there are a number of sections in 08:33:52
the declaration which talk about board of directors 08:33:57
meetings of Personalis. Mostly -- I think maybe 08:34:02
entirely in the year 2012, and we had a schedule of 08:34:05

Foresight EX1222
Foresight v Personalis
IPR2023-00317

those. 08:34:09

There was a board meeting that had been 08:34:10

scheduled for August of 2012, and in looking back, 08:34:12

presumably with the help of the IT people, the 08:34:18

calendar invitation for that was identified, and a 08:34:21

paragraph was drafted saying that we had this board 08:34:25

meeting. 08:34:29

In fact, once we looked more carefully more 08:34:30

recently, we have realized that that board meeting was 08:34:32

actually canceled. If I recall, I think I was away on 08:34:33

vacation with my family. So the board meeting was 08:34:36

canceled. 08:34:39

So the paragraph that states -- it's a very 08:34:40

short paragraph -- that states that there was a board 08:34:43

meeting in August of 2012, there are actually -- there 08:34:46

was one scheduled, but we did not actually hold that 08:34:51

board meeting. 08:34:55

Q. Can you point me to that paragraph? 08:34:56

A. We could hunt it down. I don't know the 08:34:59

paragraph number, but we could -- I think it's in the 08:35:04

section where we talk -- actually, I don't know what 08:35:06

section it's in. There's a -- it might have been 08:35:08

where we had the -- talked about the diligence in 08:35:10

pursuing the invention. 08:35:14

THE REPORTER: In pursuing what? 08:35:14

Foresight EX1222
Foresight v Personalis
IPR2023-00317

THE WITNESS: There's a section of the declaration which has to do with showing diligence, showing that we, not only invented the invention at a particular time, but we were diligent in pursuing its reduction to practice. So that's it. 08:35:19 08:35:20 08:35:24 08:35:28 08:35:33

BY MR. HEINRICH: 08:35:46

Q. It's paragraph 372. 08:35:46

A. Hold on one second. Here we go. Diligence, I guess, around page 212. I believe it is paragraph 372, which is on page 213 of the declaration and -- well, you can see it. 08:35:53 08:36:07 08:36:39 08:36:46

Q. And so that paragraph is incorrect? 08:36:49

A. Yes, that was a mistake and should be -- I think probably would be best if it was just removed because that board meeting didn't actually happen. 08:36:51 08:36:56 08:36:59

Q. So you did not, in fact, discuss updates on the accuracy program with the board in August of 2012? 08:37:02 08:37:06

A. No. Generally, we discussed updates on that at every board meeting. So that was -- given that we had a board meeting, that was automatically populated in this when this was written, but because we did not have that board meeting, we obviously couldn't have discussed anything with our board. 08:37:09 08:37:12 08:37:15 08:37:18 08:37:21 08:37:24

Q. Was there no update provided to the board that month, August of 2012, on the accuracy program? 08:37:26 08:37:29

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. Let's see. I think the next board meeting was in September. I think that's described in Section "E," beginning on page 214. Let me see if I can find the date if you want that. 08:37:32 08:37:39 08:37:46 08:37:51

So I provided an update to the board in paragraph 378. It says that I sent a presentation on September 5th, and the following paragraph says that we had a board meeting on Wednesday, September 5th from 9:00 to 11:00 a.m. 08:37:56 08:38:00 08:38:08 08:38:12 08:38:17

Q. Now, in paragraph 372, you state: 08:38:21

> "During the board of directors meeting, we discussed updates on the accuracy program"; correct? 08:38:28 08:38:29 08:38:31

A. That's what it said. I'm saying we should remove that paragraph. 08:38:33 08:38:38

Q. I understand. I'm -- 08:38:39

A. But you asked me before. You're repeating the same question, I think. I'm just making sure. 08:38:40 08:38:43

Is there a different question you're asking? I want to answer you correctly. 08:38:43 08:38:46

Q. Yes. Here's the question. 08:38:47

A. Okay. 08:38:50

Q. So that statement you made in paragraph 372 was not, in fact, based on your own independent recollection of events in August, 2012; correct? 08:38:50 08:38:53 08:38:56

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. We didn't have that board meeting. So obviously it couldn't be, no. 08:38:59 08:39:02

Q. Okay. So are there any other statements in your declaration that are not based on your own independent recollection, but instead based on what you gleaned from documents? 08:39:03 08:39:06 08:39:13 08:39:16

A. Oh, certainly. There -- there are many statements in the declaration about, particularly, Google calendar events, and I don't recall everything. That's why I have a system with Google because it's really good at keeping track of those things, but I don't remember necessarily the dates and times of everything, and I don't necessarily always remember every detail of every document, which is why I review the documents. 08:39:20 08:39:22 08:39:27 08:39:32 08:39:34 08:39:37 08:39:40 08:39:42 08:39:48

So we keep a system at the company where we have maintained the -- the Google system at the company since it was implemented in, I think, September of 2011. 08:39:49 08:39:51 08:39:54 08:39:58

Those computer records still exist, and to the extent that we had board meetings and there were documents at those board meetings, we also have kept records of all the documents at all of the board meetings from the beginning. 08:40:00 08:40:04 08:40:07 08:40:11 08:40:14

And so I, naturally, would refer to all the 08:40:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

documents that we've kept over the years in preparing material for the declaration. I think that's more reliable than necessarily relying on memory. 08:40:20 08:40:24 08:40:27

Q. But in the case of the statements in paragraph 372, that wasn't the case; right? 08:40:30 08:40:34

A. That paragraph, I expect was prepared based on having looked for a list of the board meetings that the company held by looking at Google calendar events. I was not the one that did that Google search. I don't have access to the Google system at the company anymore. And so that would have been prepared by someone else, and so that's how -- sort of that got to. 08:40:37 08:40:41 08:40:46 08:40:51 08:40:54 08:40:57 08:41:00 08:41:06

Q. So let's take an example. Let's turn to Exhibit 2038. 08:41:06 08:41:10

(Exhibit 2038 was marked for identification.) 08:41:10

THE WITNESS: 2038. 08:41:19

BY MR. HEINRICH: 08:41:20

Q. This is an exhibit that has a Google calendar update for a "Dev Group Weekly Meeting" dated May 3rd from 2:00 to 4:30 p.m.; correct? 08:41:20 08:41:26 08:41:32

A. Yes, that's right. 08:41:36

Q. Now, do you have an independent recollection of this particular meeting? 08:41:37 08:41:39

A. I have a recollection of having attended many 08:41:41

Foresight EX1222
Foresight v Personalis
IPR2023-00317

of these types of meetings, and I recall a lot of the substance that we discussed, and if we look at documents that are dated from specific meetings, I often have a good recollection of those. 08:41:46 08:41:51 08:41:54 08:41:58

Individual meetings just with a date with no other documentation related to them, generally, I may not recall the specific meeting. I, generally, have better recollection of board meetings. As CEO, those are pretty important. 08:42:01 08:42:04 08:42:07 08:42:12 08:42:15

Individual technical meetings, if there was a key substance at them, I often have a good recollection of the technical substance, but if there were updates or people working on elements of things, I don't necessarily recall every aspect of every meeting from ten years ago. 08:42:18 08:42:21 08:42:25 08:42:27 08:42:30 08:42:34

Q. Sure, sure. Now, do you know that, if this meeting took place, you -- can you tell me, sitting here today, whether you have an independent recollection of each of the listed attendees actually did attend that meeting? 08:42:36 08:42:42 08:42:44 08:42:46 08:42:51

A. I don't have any proof of that. As I've mentioned, I don't necessarily recall every detail of every meeting. 08:42:51 08:42:55 08:42:58

I will say that the R and D team was very motivated at that time. And so people -- this wasn't 08:42:59 08:43:03

Foresight EX1222
Foresight v Personalis
IPR2023-00317

a meeting -- the kind of meeting that people would avoid. It was often something that people were enthusiastic to be a part of. 08:43:05 08:43:08 08:43:11

So I don't know whether each person listed was at each one of those meetings, but I will say that they were often quite well attended, and that the times that were listed here, the meetings often went on longer than was indicated on the calendar because people were so fired up about what they were doing that the meetings might go quite a bit later. 08:43:14 08:43:17 08:43:20 08:43:25 08:43:28 08:43:32 08:43:35

Q. We've all been in meetings that go long like that. 08:43:38 08:43:41

Now, other than paragraph 372, are there any other changes that you need to make to your declaration? 08:43:42 08:43:47 08:43:50

A. No, there are not. 08:43:50

Q. So we'll just cross out paragraph 372, and we won't come back to that. So do you stand 100 percent behind everything you state in your declaration with that one excision? 08:43:52 08:44:01 08:44:05 08:44:09

A. Yes, and I have signed the declaration, and I take the signature seriously as is indicated in the text above my signature. 08:44:12 08:44:14 08:44:19

Q. Now, you cite a number of exhibits in your declaration; correct? 08:44:23 08:44:25

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. Yes. 08:44:26

Q. Did you carefully review each of the exhibits before signing your declaration? 08:44:26 08:44:31

A. Yes. As I mentioned, some of the exhibits are things like calendar invitations, and I can't say that I have looked at great detail at those. I wanted to focus most of my attention on the more significant substance of how the technology was developed and where that came from. 08:44:32 08:44:37 08:44:42 08:44:46 08:44:50 08:44:54

Q. Sure. In fact, let's just put the calendar invitations aside. 08:44:54 08:44:59

A. Okay. 08:45:01

Q. So just focusing on the other exhibits to your declaration. 08:45:02 08:45:08

A. Okay. 08:45:08

Q. Did you carefully review those exhibits? 08:45:09

A. Yes. 08:45:12

Q. And during the course of your careful review of those exhibits, did you notice any errors or mistakes in any of those exhibits? 08:45:12 08:45:17 08:45:19

A. No. 08:45:22

Q. Now, in the course of preparing your declaration, did you also review the '394 and '033 patents? 08:45:23 08:45:29 08:45:36

A. Yes, I did. I reviewed each of the claims of 08:45:37

Foresight EX1222
Foresight v Personalis
IPR2023-00317

those patents. I can't say that I reviewed every aspect of the specification because there are many aspects of the specification that informed other patents, which have come from that same patent family. 08:45:42 08:45:46 08:45:50 08:45:53

So to the extent that I reviewed the patents, I tended to focus on the claims that were specific to the '033 and '394 patents, and I believe my declaration has sections that refer to each claim and the background to each claim. 08:45:57 08:46:00 08:46:03 08:46:08 08:46:14

Q. But from what you did review of the patents, did you see any mistakes or corrections that needed to be made? 08:46:16 08:46:20 08:46:24

A. No. 08:46:24

Q. So how long were you CEO at Personalis? 08:46:25

A. I cofounded the company with four Stanford professors in February of 2011. The company existed for a few months without any employees while we were arranging financing for the company. I began to be employed by the company in August of 2011, and I began as the CEO of the company, and I stayed as CEO of the company until I retired at the end of 2022, last year, and that was my last day at the company. 08:46:40 08:46:43 08:46:50 08:46:54 08:46:59 08:47:04 08:47:10 08:47:16

My only -- the only position I ever held at the company was CEO. 08:47:19 08:47:22

[redacted]

Foresight EX1222
Foresight v Personalis
IPR2023-00317

[redacted]

MR. LUMAN: And I'll just mention we may have to mark this section of the transcript as "Confidential." 08:47:58 08:48:00 08:48:03

MR. HEINRICH: Well, I think this is public. 08:48:03

MR. LUMAN: I'm not sure -- 08:48:05

[redacted]

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. What led to you stepping down in 2022? 08:48:58

A. I had turned 65 years old in December of 08:49:01
2021, and I had been the CEO of the company for over 08:49:07
ten years at that point, and I had thought about when 08:49:12
I should retire. 08:49:16

And part of my decision about retiring was 08:49:18
informed by the experience that I had seen of some of 08:49:22
my parents' friends a generation earlier. Some of 08:49:26
whom had not retired when they were 65 and continued 08:49:32
to work longer and assumed that then they would 08:49:35
eventually be able to retire and had plans for things 08:49:39
they hoped to happily do, travel and so forth, in 08:49:42
their retirement only to, then, have medical issues or 08:49:46
other problems that came up, which then prevented them 08:49:49
from ever being able to do the things they wanted to 08:49:54
do in retirement, and I took that -- I hope to be 08:49:57
happily doing some things in retirement for decades to 08:50:03
come, but you don't always get to choose those things. 08:50:05

Foresight EX1222
Foresight v Personalis
IPR2023-00317

And so I felt it had been ten years. I had done a lot for the company. I felt that the company was in really good hands with the management team. And so I began to talk with the board of directors about retiring. 08:50:09 08:50:11 08:50:14 08:50:16 08:50:18

Their initial response was, "John, you're way too young to retire. I pointed out I was 65. We had that back and forth for some time, and I began to look at some of the specific things that I wanted to do in retirement, which actually included living sometime in another country in England, which actually we've now done. My wife and I have purchased a second home in Cambridge. 08:50:22 08:50:24 08:50:29 08:50:32 08:50:36 08:50:39 08:50:44 08:50:47

And during 2022, I made three trips to England. Two of which were related to business matters, but while I was there, I also was looking at houses, and on some vacation time, I went there also with my wife, and we looked at houses and became more and more convinced that that was what we wanted to do. 08:50:49 08:50:52 08:50:56 08:50:59 08:51:03 08:51:06

And so I continued to discuss that with the board, and we agreed that I would end my time at Personalis at the end of December, 2022. 08:51:09 08:51:12 08:51:17

[redacted]

Foresight EX1222
Foresight v Personalis
IPR2023-00317

[redacted]

MR. LUMAN: And I'll state I do think this part of the transcript is confidential. I think I've made that statement. So I don't -- I won't have to repeat it going forward. Okay. 08:51:37 08:51:39 08:51:42 08:51:45

BY MR. HEINRICH: 08:51:47

Q. Now, at the time you stepped down as CEO, Personalis was going through a difficult stretch in its history; is that fair? 08:51:47 08:51:52 08:51:56

A. No, I would say that Personalis has had different challenges the entire time from when we formed the company to when we overcame many of those challenges. There were always challenges at the company to get to the next level. I was proud of what we accomplished, but any business I've ever run always has challenges, which may vary in many different types of challenges, but I would say that the company actually was in pretty good shape from many dimensions. 08:51:58 08:52:01 08:52:04 08:52:07 08:52:09 08:52:12 08:52:17 08:52:21 08:52:25 08:52:29

It did have challenges, but I didn't leave because there were challenges. I left because, by the time I actually left, I had turned 66, and I was paying attention to wanting to move on with some of the things I wanted to do in retirement. 08:52:29 08:52:32 08:52:35 08:52:39 08:52:43

Q. Is it fair to say that at the time you 08:52:45

Foresight EX1222
Foresight v Personalis
IPR2023-00317

retired Personalis's stock was trading substantially 08:52:48
below its cash assets; correct? 08:52:51
A. That's true of many companies in the field 08:52:54
because of changes in the stock market, driven, 08:52:57
perhaps, in part by changing interest rate policy from 08:53:02
the U.S. Federal Reserve. 08:53:08
Q. Do you still own Personalis stock? 08:53:09
A. Yes, I do. 08:53:12
Q. How many shares? 08:53:13
A. I don't know the number exactly. I can 08:53:16
answer you in three parts. 08:53:20
Q. Sure. 08:53:23
A. The first part is to say that the number of 08:53:23
shares that I own outright, [redacted]
[redacted]
[redacted]
[redacted]
[redacted]
And I can say that -- so the second part of 08:53:46
my answer is that I do also have a number of stock 08:53:48
options that are still outstanding. [redacted]
[redacted]
[redacted]
[redacted]
[redacted]

Foresight EX1222
Foresight v Personalis
IPR2023-00317

[redacted]

The third part of my answer is, and I think, the -- perhaps, the underlying part of your question is whether my ownership of the stock would affect what I'm testifying to today. And the answer is I have sworn to tell the truth and the whole truth, and I will, and that's not affected by my share holdings. 08:54:21 08:54:23 08:54:25 08:54:28 08:54:31 08:54:35

I do continue to be optimistic about the future of Personalis. I think we have developed some terrific technologies that I think will help cancer patients, and I look forward to seeing that reflected long term, but it may be very long term, and I can be patient. 08:54:38 08:54:42 08:54:46 08:54:49 08:54:52 08:54:55

Q. You understand that this proceeding is taking place in the context of a dispute between Personalis and Foresight Diagnostics; correct? 08:54:58 08:55:01 08:55:06

A. Yes, I do. 08:55:09

Q. Personalis sued Foresight Diagnostics in Colorado District Court? 08:55:10 08:55:15

A. Yes, I believe that's correct. 08:55:17

Q. And were you one of the proponents for that lawsuit at Personalis? 08:55:18 08:55:22

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. Yes, I was. I was the CEO of the company. 08:55:23

Q. And you were one of the leading proponents of the lawsuit? 08:55:26 08:55:29

A. I'm sorry? 08:55:29

Q. You were one of the leading proponents of the lawsuit? 08:55:30 08:55:33

A. Yes, I would say I advocated the lawsuit. I thought it was appropriate. 08:55:33 08:55:36

Q. You understand that in a recent quarterly earnings call Personalis, sort of, promoted the lawsuit as one of the key corporate undertakings for that quarter? 08:55:49 08:55:55 08:56:00 08:56:11

MR. LUMAN: Objection; foundation. 08:56:12

THE WITNESS: No, I'm not aware of that. If there is specific language that you would like to point me to in a transcript of that, we can discuss that, but that's not my characterization of that, and I don't follow the quarterly results of Personalis or the transcripts in -- in that kind of detail. 08:56:13 08:56:15 08:56:16 08:56:19 08:56:22 08:56:27

BY MR. HEINRICH: 08:56:36

Q. So you don't consider Personalis's lawsuit against Foresight to be one of its key corporate undertakings these days? 08:56:37 08:56:40 08:56:46

A. I think it's an important step for the company. The company has many things that it's 08:56:48 08:56:50

Foresight EX1222
Foresight v Personalis
IPR2023-00317

pursuing that's important. I'm not going to prioritize them. That's not my role anymore. But I do think it is -- I think the lawsuit is important. 08:56:53 08:56:56 08:56:59

Ultimately, the decision about how the lawsuit will be pursued by Personalis will be decided by Personalis's new management, and I don't have any input on that. 08:57:02 08:57:06 08:57:10 08:57:13

Q. All right. So let's talk about the personal whole genome sequencing you had done on yourself and your family back in the 2009 and 2010 time period. 08:57:15 08:57:24 08:57:29

A. Okay. 08:57:34

Q. So first you did, in fact, have whole genome sequencing performed on you and your family in that time period? 08:57:34 08:57:38 08:57:40

A. Yes, I did. 08:57:41

Q. And your personal experience with whole genome sequencing played a role in you and your coinventors ultimate conception of the claims that are asserted in this case, claims between '394 and the '033 patents? 08:57:42 08:57:46 08:57:51 08:57:57 08:58:03

MR. LUMAN: Objection; calls for a legal conclusion. 08:58:04 08:58:08

BY MR. HEINRICH: 08:58:08

Q. Is that your position? 08:58:08

A. I'm not sure I can make a legal conclusion. 08:58:09

Foresight EX1222
Foresight v Personalis
IPR2023-00317

I can say that I had over 40 years of experience in the DNA sequencing field starting in 1982. Having our family's genome sequenced was a part of that. I do think I learned things from that, and I do think that helped to foster some of the ideas, which led to the formation of the company and to the intellectual property filings that the company made and that I was a coinventor on. 08:58:12 08:58:14 08:58:19 08:58:22 08:58:26 08:58:33 08:58:39 08:58:41

Q. So in your declaration, one of the issues that you address is that you claim that you and your coinventors conceived of the claims of the '033 and '394 patents no later than May 8, 2012; correct? 08:58:43 08:58:51 08:58:56 08:59:02

A. Yes, I believe that's correct. 08:59:07

Q. And you discussed your personal experience with whole genome sequencing in your declaration because you think it's relevant to that general subject matter; right? 08:59:08 08:59:10 08:59:14 08:59:16

A. It is, but it wasn't the only experience. I had been the CEO of the company that developed the technology that was used for sequencing. So I had wide experience in whole genome sequencing. My family's genomes were part of that, and it was helpful, but it wasn't the sole basis for what we did. 08:59:17 08:59:19 08:59:22 08:59:24 08:59:28 08:59:33

Q. I wasn't trying to suggest it was. 08:59:37

A. I'm just trying to be clear. 08:59:40

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. So let's take a look at Exhibit 2114. 08:59:41

(Exhibit 2114 was marked for identification.) 08:59:41

THE WITNESS: 2114. Sorry. 09:00:00

BY MR. HEINRICH: 09:00:01

Q. I'm sorry -- yeah, 2114. 09:00:01

A. So this is the individual genome sequence report that was generated for the sequencing of my genome. 09:00:41 09:00:44 09:00:48

Q. Okay. So this is a report from Illumina on the whole genome sequencing that was conducted for you personally; correct? 09:00:53 09:00:53 09:00:57

A. Yes. The report was officially issued, not to me, but it was ordered to a physician that I worked with, and the physician ordered the test officially, and then the data was, and results, were transferred to me. 09:00:57 09:00:59 09:01:03 09:01:08 09:01:11

So that's why you see the report being addressed to Dr. Naviaux because it was at -- at least at that time was at the University of California San Diego. 09:01:12 09:01:14 09:01:19 09:01:21

But, yes, this was -- this was -- went to him, and then he conveyed it to me. 09:01:22 09:01:24

Q. Yeah, but this was the whole genome sequencing performed on you? 09:01:26 09:01:31

A. Yes, that's right. This is from my blood 09:01:32

Foresight EX1222
Foresight v Personalis
IPR2023-00317

sample. 09:01:34

Q. Okay. If we go to page 2, this report -- let me start over. 09:01:34 09:01:41

So on page 2, the summary statistics state that the base pairs reported, paren, consensus are just over 2.715 billion base pairs? 09:01:41 09:01:46 09:01:54

A. Yes, that's correct. 09:02:03

Q. That would be approximately 84 percent of the entire genome consisting of 3.2 or so billion base pairs? 09:02:04 09:02:08 09:02:14

A. The way that Illumina reported it was relative to the known human reference sequence, which they specifically list the NCBI, which is a U.S. government group, the NCBI reference. 09:02:14 09:02:19 09:02:22 09:02:27

And so the consensus sequence they were able to determine from my genome covered 95.1 percent of the known human reference sequence. It was well known at that time and is still mostly true that the -- there are portions of the human genome which are difficult for current sequencing technologies and sequencing technologies of that time to capture, for example, the centromeres of some chromosomes. And -- and so those are not included in the reference sequence. 09:02:31 09:02:35 09:02:40 09:02:43 09:02:47 09:02:52 09:02:56 09:02:59 09:03:04 09:03:09

So when people considered how complete a 09:03:09

Foresight EX1222
Foresight v Personalis
IPR2023-00317

whole genome sequence was -- and certainly there was a goal to try to sequence as much as possible. Generally, the goal was to sequence as much as possible of the known reference sequence because the -- you could only form a consensus sequence by aligning the sequence reads to the reference. 09:03:13 09:03:16 09:03:19 09:03:24 09:03:27 09:03:32

Any portion of the human genome, which was not in the official reference, couldn't be included. Even though sequence reads might be generated there, you wouldn't know how to arrange them or where they fit. 09:03:34 09:03:38 09:03:41 09:03:44 09:03:47

And so the standard that was typically used at the time was what Illumina represented here, which was that the consensus sequence that they established covered 95.1 percent of the NCBI reference sequence. 09:03:48 09:03:50 09:03:53 09:03:59

Q. So in your view, in assessing the coverage of this sequencing that was done on yourself, it wouldn't be appropriate to use as your denominator the 3.2 billion bases of the human genome? 09:04:07 09:04:12 09:04:16 09:04:20

MR. LUMAN: Incomplete hypothetical. 09:04:24

THE WITNESS: No. That's exactly not what I said. I said that the way that the calculation was done by Illumina did not use the 3.2 billion. It used the size of the human referenced sequence at that time, which, if I recall, was approximately 2.85. 09:04:26 09:04:28 09:04:32 09:04:37 09:04:41

Foresight EX1222
Foresight v Personalis
IPR2023-00317

And so if you take the size of the consensus sequence here that's shown as being approximately 2.71 billion bases, the -- that is 95 percent. So if you added 5 percent onto that, it comes to probably something like 2.85, and that would be the number. 09:04:45 09:04:48 09:04:51 09:04:57 09:05:01

So in general, we did not focus on the 3.2 billion because not all of the 3.2 billion was considered accessible to the technologies of that time. 09:05:04 09:05:09 09:05:14 09:05:19

BY MR. HEINRICH: 09:05:19

Q. But if you did compare it to the 3.2 billion bases of the human genome, then this would have covered about 84 percent of that; correct? 09:05:19 09:05:23 09:05:26

MR. LUMAN: Lacks foundation. 09:05:28

THE WITNESS: I haven't done that calculation, and it really isn't relevant to what we were trying to do at the time. So I think you're -- I don't want to head down that direction because it isn't -- you're, sort of, implying that that's how we thought about it, and that isn't how we thought about it. 09:05:30 09:05:32 09:05:34 09:05:37 09:05:40 09:05:42 09:05:45

BY MR. HEINRICH: 09:05:47

Q. Fair enough. Why don't you turn next to Exhibit 2022 [sic], I believe. 09:05:47 09:06:08

(Exhibit 2122 was marked for identification.) 09:06:08

Foresight EX1222
Foresight v Personalis
IPR2023-00317

THE WITNESS: 2022? 09:06:14

BY MR. HEINRICH: 09:06:15

Q. I'm sorry. 2122. 09:06:15

A. 2122. Okay. So you're asking about the -- 09:06:20

there's an article that was published in the journal 09:06:43

"PLOS Genetics"? 09:06:43

Q. Yes. 09:06:48

A. Okay. Thank you. 09:06:48

Q. And what is this article? 09:06:48

A. This is a publication by a group of -- 09:06:52

primarily a group of academic researchers that I and 09:06:57

my family worked with on the interpretation of our 09:07:02

family's genomes. It includes researchers at Stanford 09:07:06

University, including all four of the Stanford 09:07:13

professors who were cofounders of Personalis, but it 09:07:16

also includes other researchers at Harvard University, 09:07:20

including, for example, George Church, Dr. Thakuria, 09:07:24

Heidi Rehm, and others from Harvard who were also 09:07:32

involved in the process of the initial interpretation 09:07:37

of our family's genomes. 09:07:39

Q. If you turn to page 2, I will direct your 09:07:55

attention to the first paragraph of the "Results" 09:07:59

section. 09:08:02

So I'm going to direct your attention in 09:08:24

particular to the last sentence. 09:08:26

Foresight EX1222
Foresight v Personalis
IPR2023-00317

"We use the Illumina GAII sequencing platform" --

A. Genome AnalyzerII.

Q. -- "to sequence genomic DNA from peripheral blood monocytes from four individuals in this nuclear family, providing 39.3X average coverage of 92 percent of known chromosomal positions in all four family members."

Do you see that?

A. Yes, I do.

Q. What is the article referring to when it says, "known chromosomal positions"?

A. I don't recall exactly what it was referring to. I assume that each of these would be positions that are known on the human chromosomes.

Q. Would that also be a reference to the 2.8 or so billion consensus sequence that you referred to in your testimony a few minutes ago?

A. No -- it wasn't 3.8 [sic]. The number was 2.715.

The second thing is that this refers to the four individuals.

The report that we looked at earlier was a report just on my genome, and the coverage of the four

Foresight EX1222
Foresight v Personalis
IPR2023-00317

different genomes was not the same. There was some variability from one individual to another. 09:09:57 09:10:00

The Illumina specification, at the time that we purchased their service, was that they would attempt to cover at least 90 percent of the reference sequence. And as you saw in my genome, they achieved that by achieving just over 95 percent. 09:10:04 09:10:08 09:10:12 09:10:18 09:10:21

The extent to which they covered the genomes of the other family members, all of them were above the 90 percent level. I don't recall exactly where they were. 09:10:26 09:10:29 09:10:32 09:10:35

I would say that the results that were published in this paper were based on a reanalysis of the raw data. And so the exact coverage statistics that would have been reported in this article may be somewhat different from what Illumina had because different software, using slightly different algorithms, was used. 09:10:36 09:10:41 09:10:45 09:10:50 09:10:54 09:10:57 09:11:00

The group that did the -- I'll call it the "technological, nonclinical level analysis" of our raw data was the group at Stanford, not the group at Harvard. And they used different software from what was used by Illumina. So although the results were similar, they were not necessarily exactly the same. 09:11:03 09:11:08 09:11:13 09:11:19 09:11:22 09:11:27

Q. But just to go back to this passage here -- 09:11:30

Foresight EX1222
Foresight v Personalis
IPR2023-00317

well, actually, you said Illumina's goal was to report at least 90 percent of the reference genome as part of its whole genome sequencing service? 09:11:40 09:11:46 09:11:52

A. And in particular, that was defined by them as identifying some sequence over that area. They didn't necessarily specify what the coverage would be at each of those positions, and they did not specify that they would be able to identify genetic variants over all of that. 09:11:56 09:12:00 09:12:05 09:12:09 09:12:12 09:12:18

The number that you saw in the report is a consensus sequence number, which would be an estimate of what they -- of what my genome sequence is, but not necessarily taking into account all of the genetic variants that would exist in the genome. 09:12:18 09:12:20 09:12:22 09:12:27 09:12:31

Q. So it was Illumina's goal to report at least 90 percent of the 2.8 billion base pairs in the reference genome; correct? 09:12:33 09:12:38 09:12:46

MR. LUMAN: Objection; calls for speculation. 09:12:47

And please don't reveal any confidential third-party information. 09:12:50 09:12:52

THE WITNESS: So the -- I have a copy of the promotional material that Illumina showed us when we were discussing spending the money to have our genomes sequenced, and the specification that we -- that was on the product was that they would sequence with a 09:12:54 09:12:58 09:13:04 09:13:08 09:13:12

Foresight EX1222
Foresight v Personalis
IPR2023-00317

goal of covering at least 90 percent of the human reference sequence. 09:13:16 09:13:21

And sequencing human genomes was quite new at that point. So we understood that that would be their goal and that they would continue to add more raw sequence data until they could achieve that level. 09:13:22 09:13:26 09:13:31 09:13:35

And it was my opinion that they did achieve that level. The amount of sequencing actually required for that was a little different from one person in our family to another. 09:13:39 09:13:41 09:13:44 09:13:48

BY MR. HEINRICH: 09:13:50

Q. Have you ever heard of the term the "DEGAPed genome"? 09:13:51 09:13:54

A. I have heard of that. I'm not sure I could define it very carefully. 09:13:58 09:14:00

THE REPORTER: Degat, g-a-t? 09:14:00

MR. HEINRICH: DEGAPed. 09:14:14

BY MR. HEINRICH: 09:14:14

Q. Are you familiar with the fact that the DEGAP genome is reported to have approximately 2.8 billion base pairs? 09:14:16 09:14:19 09:14:23

MR. LUMAN: Outside the scope. 09:14:24

THE WITNESS: I think the idea is that in the human reference sequence there are places along a number of the chromosomes where we don't know what 09:14:25 09:14:28 09:14:33

Foresight EX1222
Foresight v Personalis
IPR2023-00317

the -- there is no reference sequence which has been determined; and, therefore, there are gaps. 09:14:36 09:14:39

My recollection was that at approximately the time that our family was sequenced, the version of the human reference that was used had approximately 350 known gaps, and so that would not have been -- when we say that the length of the human reference sequence at that time was about 2.85 billion bases, I believe that did not include any of -- gaps. 09:14:42 09:14:44 09:14:47 09:14:54 09:15:00 09:15:04 09:15:09

Some of the gaps were thought to be short, and some of the gaps -- largest probably being the centromere of Chromosome 1, almost 20 million bases that were -- at that time the reference sequence could not cover that. 09:15:11 09:15:14 09:15:18 09:15:24 09:15:26

BY MR. HEINRICH: 09:15:45

Q. And even today, there are known gaps in the human genome; correct? 09:15:45 09:15:48

MR. LUMAN: Objection; foundation, incomplete hypothetical. 09:15:51 09:15:55

THE WITNESS: So there are now newer technologies which allow the sequencing of the human genome, and it's my understanding that a team, using the Pacific Biosciences technology, has now completed what they refer to as the "Telomere to Telomere Project," which I believe sequenced the genome of at 09:15:55 09:16:05 09:16:08 09:16:11 09:16:16 09:16:22

Foresight EX1222
Foresight v Personalis
IPR2023-00317

least one individual with no gaps. 09:16:26

Obviously, there -- each chromosome is 09:16:31

separate, but within each chromosome, it's my 09:16:34

understanding that they were able to achieve a 09:16:36

complete sequence with no gaps, and that that data has 09:16:38

now been made public. 09:16:43

I don't know how many of those genomes there 09:16:45

are, and I wouldn't necessarily think of that as a 09:16:48

reference sequence, but it does show that it is, I 09:16:52

believe now, technologically possible today in a way 09:16:56

that was not possible at the time that my family's 09:17:00

genomes were sequenced to, in fact, sequence a genome 09:17:02

without any gaps. 09:17:06

BY MR. HEINRICH: 09:17:08

Q. When did it first become possible to sequence 09:17:13

a human genome consistent with approximately 09:17:18

3.2 billion base pairs without any gaps? 09:17:22

A. In the last few years, quite a long time 09:17:26

after we filed these patents or filed for the -- filed 09:17:31

the provisional filing. So -- but I don't know the 09:17:35

exact date. You could look it up. 09:17:39

If you look up the -- what was called the 09:17:41

"Telomere to Telomere Consortium," I think you'll find 09:17:44

their publications, and you could look up the dates. 09:17:50

Q. All right. I'm going to switch to a new 09:18:04

Foresight EX1222
Foresight v Personalis
IPR2023-00317

area. Why don't we take our first break. 09:18:15

MR. LUMAN: Sure. And I'll state that we'd like to keep the breaks short today. Would five minutes be okay? 09:18:19 09:18:20 09:18:24

MR. HEINRICH: Yeah. 09:18:26

THE WITNESS: Are you okay if I leave the room to use the restroom? 09:18:26 09:18:28

MR. HEINRICH: Of course. That's the whole point of the break. 09:18:31 09:18:32

THE VIDEOGRAPHER: Okay. We're going off the record. The time is 9:18. 09:18:34 09:18:34

(Recess taken.) 09:24:28

THE VIDEOGRAPHER: We're back on the record. The time is 9:24 a.m. 09:24:28 09:24:35

THE WITNESS: I just want to confirm, since I put my microphone on, that you can hear me properly. 09:24:37 09:24:39

Thank you. 09:24:43

BY MR. HEINRICH: 09:24:43

Q. Did you have any discussions with counsel at the break? 09:24:43 09:24:45

A. No. 09:24:46

Q. All right. So I want to ask you some questions about the date of conception that you provided in your declaration. 09:24:46 09:24:56 09:25:03

As we discussed earlier, you state in your 09:25:08

Foresight EX1222
Foresight v Personalis
IPR2023-00317

declaration that each of the claims of the '394 and '003 [sic] -- '033 patents were conceived by no later than May 8, 2012; correct? 09:25:11 09:25:15 09:25:23

A. Yes, that's correct. 09:25:26

Q. Now, what -- what do you think is the earliest that it could have been conceived? 09:25:27 09:25:36

A. So the -- these patents are method patents. So they include multiple elements, and we became familiar with -- I became familiar with several of the elements quite a bit before that. 09:25:41 09:25:46 09:25:52 09:25:57

So, for example, in -- by February of 2008, I was aware of and thinking about the use of what's called "Hybrid Capture Technology" in cancer. 09:25:59 09:26:06 09:26:10

And when our family's genomes were sequenced, I became more aware of some of the inadequacies of the sequencing technology, which I viewed as a business opportunity to supplement the genome, and there are other elements that are included. 09:26:15 09:26:21 09:26:28 09:26:31 09:26:38

I would say that the -- of all the pieces that came together to form the basis for the '033 and '394 patent, probably the last of those elements to come together was from a paper that was -- I believe it's an exhibit here -- that was published by Mike Snyder's group at Stanford. 09:26:41 09:26:45 09:26:49 09:26:54 09:26:59 09:27:04

The publication came out in March of 2012, 09:27:07

Foresight EX1222
Foresight v Personalis
IPR2023-00317

and our group had seen a preview copy of it at least a month earlier. We worked very closely with Mike since he was a cofounder of the company. 09:27:10 09:27:15 09:27:19

And once the peer review was completed and it was clear that the publication was going to come out, just that it was being scheduled, we saw a preview copy of that, and that had the elements there that were helpful or understanding of looking at genetic data over multiple time points. 09:27:21 09:27:24 09:27:27 09:27:32 09:27:36 09:27:43

In the case of that paper, they looked at, I believe, 20 time points. 09:27:46 09:27:48

And that was probably the last of the elements that, then, came together in the material that we presented to our board on May 8th. 09:27:50 09:27:52 09:27:56

Q. So reading that paper was, sort of, your aha moment for the claims of the '394 and '033 patents? 09:28:00 09:28:05

A. No. I would say that there are many elements that we had -- many elements. These patents are not only one concept. They are the confluence of a number of concepts being used together. 09:28:09 09:28:12 09:28:19 09:28:25

And so our realization of the opportunity and of, perhaps, nonobvious ways to go about solving those problems, addressing those opportunities, those accumulated over an extended period of time. 09:28:27 09:28:32 09:28:36 09:28:39

There was not what I would call a single aha 09:28:42

Foresight EX1222
Foresight v Personalis
IPR2023-00317

moment, but I would say the -- that was an important input seeing that paper, and that the other elements of the patent were things that we had thought of or become aware of earlier than that, but I would say that that would have been the last of the elements. 09:28:46 09:28:52 09:28:57 09:29:02 09:29:05

Q. Would you turn, please, to Exhibit 2041. 09:29:20

(Exhibit 2041 was marked for identification.) 09:29:20

THE WITNESS: So I think Exhibit 2041, just to make sure we're talking about the same thing, is an e-mail that I sent to Carol Tellis with the subject "J. West Board Slides, with one slide revised, Number 8 of 14." 09:30:03 09:30:06 09:30:08 09:30:12 09:30:16

Does that sound correct? 09:30:17

BY MR. HEINRICH: 09:30:21

Q. Yes. So in this e-mail, you're attaching your May 8, 2012, board presentation, which is also an exhibit at 2112; correct? 09:30:21 09:30:24 09:30:31

A. So these are my board slides for the May 8th -- what was the other one, 2112? 09:30:36 09:30:49

Q. Yes. 09:30:55

A. I just don't remember all the exhibit numbers off the top of my head. So if you want me to check that, I can look at that. I'm sorry. 09:30:56 09:30:59 09:31:02

Yes, it looks like Exhibit 2112 is also a copy of my board of directors slides from the May 8, 09:31:44 09:31:47

Foresight EX1222
Foresight v Personalis
IPR2023-00317

2012, meeting. 09:31:52

Q. And if we go back to Exhibit 2041 -- 09:31:56

A. Do I need to, kind of, keep my hand here so that I can flip back and forth between them? Or -- 09:32:00 09:32:02

are we done with that one for now? 09:32:04

Q. Yeah, for now. Yeah, we're done. 09:32:06

A. Just so I don't have to flop through all these pages again. 09:32:08 09:32:11

So I'm looking at the e-mail. 09:32:20

Q. In reference to having revised your deck for the May 2012 board meeting; correct? 09:32:21 09:32:31

THE REPORTER: Your deck? 09:32:31

MR. HEINRICH: Deck. 09:32:31

THE WITNESS: Slide deck. 09:32:34

It looks like from the e-mail what was revised was Slide Number 8 of 14. 09:32:35 09:32:38

BY MR. HEINRICH: 09:32:43

Q. So do you recall how far in advance of May 8th you first drafted this deck? 09:32:43 09:32:46

A. No, I don't recall that. 09:32:48

Q. You drafted it in advance of May 8th, though; correct? 09:32:51 09:33:02

A. Yes. I did not prepare board slides on the morning of the meeting. 09:33:02 09:33:08

Q. Yes. Did you have a practice of circulating 09:33:09

Foresight EX1222
Foresight v Personalis
IPR2023-00317

a preread of slides for the board? 09:33:12

A. To the extent that we had slides ready ahead of time, we did circulate them to the board earlier, but I don't recall for this particular meeting. 09:33:14 09:33:19 09:33:24

I would say that at this time the company had only been operating for less than one year. So it was quite a small company. So I just don't remember what we had in terms of when we circulated or even whether these were circulated in advance to our board. 09:33:26 09:33:30 09:33:36 09:33:39 09:33:42

We certainly, for the board meetings at that time, would have provided a printed board book. So when the board meetings were all in person. So each board member, when they came, would have received a physical book. If we hadn't sent it out ahead of time, they would have received it at the meeting, and they would have had a binder that had presentations in it. 09:33:46 09:33:48 09:33:54 09:33:57 09:34:00 09:34:03 09:34:05 09:34:08

Q. Did you have a practice of circulating draft board slides to your team before board meetings? 09:34:08 09:34:14

A. I would say it was probably not a consistent practice. The material that we presented to the board was generally material that we had discussed in other forms beforehand. 09:34:22 09:34:28 09:34:31 09:34:35

The board slides often were something of a condensation or a summary of other things that might 09:34:36 09:34:40

Foresight EX1222
Foresight v Personalis
IPR2023-00317

have been described in more detail in scientific or technical meetings. So I didn't expect anyone to be surprised at the meeting. 09:34:44 09:34:49 09:34:53

We had our management team attend at least the first part of each board meeting, and often other members of the management team would have their own presentations at the board meetings. 09:34:54 09:34:59 09:35:03 09:35:06

Q. And do you recall whether you circulated the draft of your May 8th board presentation to anyone on your management team? 09:35:08 09:35:13 09:35:18

A. Well, let's see. Certainly, I had sent slides to Carol Tillis. Carol was our VP of finance and handled other areas as well. I don't recall whether this was circulated to other members of our management team in advance of the board meeting or not. 09:35:21 09:35:26 09:35:33 09:35:36 09:35:40 09:35:43

Q. Do you recall if you had any input on these slides from anyone on the management team, including also folks on the R and D and scientific teams? 09:35:43 09:35:49 09:35:51

A. Certainly. To the extent that we were presenting scientific or technical matters or plans, those were, generally, discussed extensively with the R and D team and with the management team. So they would have, certainly, been involved in that content. 09:35:56 09:35:58 09:36:02 09:36:06 09:36:10

Whether they saw a particular slide or 09:36:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

particular graphic that was made to show the idea to the board, not everybody saw every slide ahead of time, and I didn't see every slide of the R and D presentation ahead of time either, but I was fine with that because we shared the main elements of what we were doing. 09:36:19 09:36:25 09:36:28 09:36:31 09:36:37 09:36:40

Q. So I realize this was a very long time ago now. 09:36:41 09:36:43

A. Mm-hmm. 09:36:43

Q. But do you happen to have any specific recollection of having any discussions or getting any input from others on your May -- what became your May 8th, 2012, board presentation in advance of that board meeting? 09:36:43 09:36:47 09:36:50 09:36:56 09:37:00

A. I would say that we -- at that time, we had board meetings fairly frequently, almost monthly, and so we had had a board meeting, I believe, in March of that year, in February of that year, in January of that year, and so I certainly had a practice -- to the extent that the slides, if they weren't shared before the board meeting, then they would have been shared after the board meeting. 09:37:01 09:37:06 09:37:10 09:37:15 09:37:18 09:37:24 09:37:27 09:37:29

And so if people had seen slides, they would have seen slides from the prior meeting and the meeting before that, and so forth, and there was -- 09:37:31 09:37:34 09:37:37

Foresight EX1222
Foresight v Personalis
IPR2023-00317

because it wasn't very long from one board meeting to the next, people were certainly familiar with the themes that we were discussing with the board. 09:37:40 09:37:43 09:37:49

Q. Just to go back to my question. I don't think you answered. 09:37:52 09:37:56

Do you have any specific recollection of discussing your -- any drafts of your May 8th presentation with other Personalis employees, scientists, R and D people in advance of that meeting on May 8th? 09:37:59 09:38:04 09:38:11 09:38:18 09:38:21

MR. LUMAN: Asked and answered, mischaracterizes the testimony. 09:38:23 09:38:25

THE WITNESS: The content of the slides, the substance of them, certainly was discussed extensively with other members of the scientific and technical staff and management team. 09:38:27 09:38:30 09:38:34 09:38:38

I don't recall discussing the specific layout of the slides with them. Generally, I prepared my own slides, often borrowing from material that I had from other meetings, and so I don't know that we discussed the specific slides, but we certainly would have discussed the scientific and technical content of them and the -- and also the business implications of that content. 09:38:41 09:38:46 09:38:50 09:38:52 09:38:56 09:38:59 09:39:04 09:39:07

BY MR. HEINRICH: 09:39:07

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. So let's turn to 2112. Since you refer -- 09:39:16

A. So that's the other one we looked at a minute ago. 09:39:24 09:39:27

(Exhibit 2112 was marked for identification.) 09:39:27

BY MR. HEINRICH: 09:39:27

Q. And since that's the exhibit that you rely on so frequently in your declaration, we'll focus on that exhibit number for the questions on those issues. 09:39:28 09:39:33 09:39:37

A. Okay. I have turned to Exhibit 2112. 09:40:07

Q. And why don't we turn to Slide 5 of that presentation. 09:40:10 09:40:17

A. One moment. Okay. I'm looking at Slide 5. 09:40:23

Q. And this is a slide that you refer to frequently in your declaration; correct? 09:40:35 09:40:37

A. Yes, that's correct. 09:40:40

Q. The title of the slide is "Overview of Personalis Accuracy Program"; correct? 09:40:41 09:40:44

A. Yes, that's correct. 09:40:47

Q. And you're providing this overview to the board of directors on May 8th, 2012? 09:40:48 09:40:53

A. Yes, that's correct. 09:40:57

Q. And you were describing to the board a proposed genome sequencing project; correct? 09:40:58 09:41:04

A. No. That's not what this is about. 09:41:07

Q. This is not about a genome sequencing 09:41:11

Foresight EX1222
Foresight v Personalis
IPR2023-00317

project? 09:41:16

A. Whole genome sequencing was one of the 09:41:17

technologies that we described using, but a genome 09:41:21

sequencing project would, generally, be a term used to 09:41:25

mean a project intending only to sequence the whole 09:41:29

genomes of a number of individuals, and that's not 09:41:32

what the focus of this slide was. 09:41:34

Q. So just to be clear, I didn't say "whole 09:41:36

genome." So let's go back. I'm going to make sure -- 09:41:39

A. Okay. 09:41:39

Q. -- that you heard my question correctly. 09:41:43

A. Okay. 09:41:45

Q. So at this May 8, 2012, meeting with the 09:41:45

board of directors -- 09:41:51

A. Yes. 09:41:52

Q. -- you were describing to the Personalis 09:41:52

board a genome sequencing project; correct? 09:41:55

MR. LUMAN: Mischaracterizes the document and 09:41:59

his testimony. 09:42:05

THE WITNESS: I was describing a plan we had 09:42:06

for using DNA sequencing technologies to derive 09:42:08

genetic information from human individuals, and that 09:42:16

included DNA sequencing, which in some cases was what 09:42:19

we described as "whole genome sequencing." 09:42:26

In other cases, you can see it refers to 09:42:28

Foresight EX1222
Foresight v Personalis
IPR2023-00317

exome sequencing. In other cases, it referred to panels of various kinds that were provided. 09:42:31 09:42:36

So in general, it did include DNA sequencing of human DNA, but not all of the sequencing would be described as genome sequencing in the sense that, when people use that term, they usually are implying something that implies the whole genome or a large portion of it, and we were also talking about technologies that could cover only a targeted portion of the genome. 09:42:38 09:42:43 09:42:48 09:42:51 09:42:55 09:42:58 09:43:00 09:43:06

BY MR. HEINRICH: 09:43:07

Q. So you were describing for the board a sequencing project; correct? 09:43:07 09:43:10

A. We were describing our -- what was going to be our product development plan. This was not a new topic for our board. At prior board meetings, we had laid out plans like this as well. And so this was a -- perhaps, the most recent version of what our planning was, and the goal was to develop a platform, which had multiple capabilities, which could lead to multiple products, which it did. 09:43:12 09:43:17 09:43:23 09:43:26 09:43:30 09:43:33 09:43:38 09:43:41

Q. But the project, the specific project and the specific program you were presenting to the board at this time in May of 2012 was a sequencing project; correct? 09:43:44 09:43:51 09:43:53 09:43:59

Foresight EX1222
Foresight v Personalis
IPR2023-00317

MR. LUMAN: Asked and answered. 09:44:00

THE WITNESS: I would say that that's not correct. I think it's just some confusion on terminology. If somebody talked to me about a sequencing project, I would usually interpret that to mean a plan to sequence a specific set of samples to derive a certain set of data. 09:44:01 09:44:04 09:44:06 09:44:08 09:44:12 09:44:16

And instead, we were here describing a capability, which could be used for sequencing projects, and later in the same board presentation -- I'm sorry. You're not paying attention. Do you want me to answer? 09:44:18 09:44:22 09:44:25 09:44:30 09:44:33

BY MR. HEINRICH: 09:44:34

Q. I am. 09:44:34

A. Okay. So later in the same presentation to the board of directors, we did propose a sequencing project with a number of named specific DNA samples and how they would be sequenced, and so there was a proposal to do a -- to conduct a sequencing project that's in the later slides of that presentation, but the Slide Number 5 was not a closed end project to sequence specific samples. It was a plan for a platform capability. 09:44:34 09:44:37 09:44:41 09:44:46 09:44:50 09:44:55 09:44:58 09:45:06 09:45:11

Q. Where -- so what slide are you referring to as describing a sequencing project? 09:45:13 09:45:16

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. So this begins on Slide Number 9 where we talk about progression of genome datasets. The founder genomes, these included my family's genomes. We already had that data. 09:45:18 09:45:36 09:45:41 09:45:46

In the middle, you see "downloading." This was DNA sequencing that had been performed at other genome centers where we were able to download the data. 09:45:48 09:45:51 09:45:55 09:45:58

And on the right-hand side of that slide, you see a proposal, which we elaborate on on the subsequent slides for us to contract the sequencing of the genomes of 17 people from the -- what's referred to as the "CEPH1463 family." This was a well known set of samples and also to sequence the individual -- the genome of a well known individual, Craig Venter, as well. 09:45:58 09:46:03 09:46:06 09:46:10 09:46:15 09:46:21 09:46:25 09:46:30

And then on Slide 10, it shows the organization of that family of 17 individuals, and there was additional information about this on Slide 11 and a proposal for a -- what we would contract was on Slide 12 with a budget for that project, and that budget was approved by the board. 09:46:31 09:46:37 09:46:43 09:46:47 09:46:54 09:47:01

But that's -- I'm just clarifying, when you talk about a sequencing project, that's what I would think of as a sequencing project where you have a 09:47:03 09:47:08 09:47:13

Foresight EX1222
Foresight v Personalis
IPR2023-00317

specific set of samples, and you want to have them sequenced to a certain specification to achieve certain data. 09:47:16 09:47:19 09:47:21

Q. So the title of Slide 9 is "Progression in Genome Datasets for Accuracy Studies"; correct? 09:47:22 09:47:30

A. Yes, that's correct. 09:47:34

Q. So the accuracy studies here, this is part of how you propose to proceed with what you call the Personalis Accuracy Program; correct? 09:47:35 09:47:43 09:47:48

A. It was one element of it, yes. It was to provide data to reduce -- I think you would -- maybe the right term is reduction to practice to generate specific data that would help us reduce the invention to practice. 09:47:51 09:47:54 09:47:58 09:48:01 09:48:04

Q. And so the datasets for accuracy studies that are referred to in Slide 9, these were datasets that you would use as part of your efforts to develop a -- what you thought would be a more accurate way to do sequencing; correct? 09:48:05 09:48:19 09:48:23 09:48:30 09:48:36

A. Yes. It was intended in particular to identify and to be able to document the errors that existed in sequencing by studying a family, which we began by studying my family's genomes. You can find elements of the sequence, which aren't biologically possible. 09:48:38 09:48:42 09:48:48 09:48:53 09:48:59 09:49:04

Foresight EX1222
Foresight v Personalis
IPR2023-00317

So, for example -- or it would be very unlikely to be possible. 09:49:04 09:49:08

So simply, generally, the genome of a child is composed of DNA that came from the father and the mother. If you found significant differences, where there were genetic variants in the genome of the child that were not in either parent, a very small number of those could be new mutations, but in general those would be indicative of sequencing errors. 09:49:09 09:49:12 09:49:17 09:49:20 09:49:27 09:49:31 09:49:34

And so by looking at more elaborate families, which is why we looked at a three-generation family of 17 people, it gave a -- we felt it would give us a detailed dataset to identify errors that were being caused by the sequencing technology. 09:49:36 09:49:39 09:49:43 09:49:47 09:49:52

And we saw a business opportunity in being able to develop technologies that would let us improve the accuracy of sequencing, not by changing the sequencing instrument or sequencing reagents, but alternative sample prep and data analysis techniques. 09:49:54 09:49:58 09:50:04 09:50:08 09:50:13

But we wanted to be able to have a clear understanding of what the errors were that we were trying to fix. 09:50:18 09:50:22 09:50:24

Q. Right. So the first step of your efforts to come up with more accurate sequencing was to study and characterize errors in existing sequencing techniques 09:50:27 09:50:32 09:50:37

Foresight EX1222
Foresight v Personalis
IPR2023-00317

and technologies; correct? 09:50:44

A. As it shows on Slide 9, we had already begun 09:50:45

that with my family's genomes, and the publication 09:50:50

that you pointed me to earlier in "PLOS Genetics" 09:50:53

showed some of the techniques that were used on my 09:50:58

family's data and helped to characterize some of the 09:51:00

errors in the sequencing of that time. 09:51:04

This was -- by this time, we were in 2012. 09:51:06

My family's genomes were sequenced starting in late 09:51:10

2009, and the technology had been improving. 09:51:14

So we wanted to have more up-to-date data on 09:51:17

more modern sequencing technologies, and we felt that 09:51:21

we could be more thorough by having data from a larger 09:51:26

family of 17 people over three generations than we 09:51:31

were able to with four people. 09:51:35

And lastly, there was a desire to move away 09:51:37

from use of the genomes of the CEO of the company and 09:51:40

his family because people felt that was a bit awkward, 09:51:47

and I was supportive of that. So we moved away from 09:51:51

my family's genomes and used sequencing data. 09:51:54

By the time of this meeting, we had already 09:51:57

began to download genomes that had been sequenced by 09:52:00

other people, including in particular the Broad 09:52:04

Institute, but also the Korean personal genome 09:52:07

project, and we were using those in the same way. 09:52:10

Foresight EX1222
Foresight v Personalis
IPR2023-00317

So this was a continuation of an effort that had begun in 2010, once we received my family's genomes, and this was progressing to come up with better and better datasets that would allow us to do a better and better job. 09:52:13 09:52:17 09:52:21 09:52:25 09:52:29

Q. So at the time of the May 8, 2012, board meeting, you hadn't completed your work in characterizing errors in the sequencing of current technologies circa 2012; right? 09:52:30 09:52:34 09:52:39 09:52:45

A. I would say that, as of today in 2023, there are still errors that we have not characterized. It's not a process that you start and completely finish. It's a question of having started it, improving on it, and then continuing to improve on it. 09:52:48 09:52:51 09:52:54 09:52:57 09:53:02

So we were -- we had a sufficient characterization from the work we had done in 2011 and published in 2011 that we knew what some of the problems were, which those led to the plans we laid out for our board of directors at the beginning of 2012, and those underlined the plans that we described on Slide 5 of the presentation. 09:53:03 09:53:06 09:53:11 09:53:17 09:53:21 09:53:25 09:53:29

So these were -- I would describe it as progressively better and better reduction to practice, not invention. 09:53:31 09:53:35 09:53:37

Q. So let's go back to Slide 5. Slide 5 has 09:53:40

Foresight EX1222
Foresight v Personalis
IPR2023-00317

three columns; correct? 09:53:47

A. Yes, that's correct. 09:53:48

Q. And the first column is to characterize 09:53:49

errors; right? 09:53:54

A. Yep. 09:53:55

Q. And it was important for your program to 09:53:56

improve accuracy of sequencing to characterize errors 09:54:01

in the sequencing technologies that existed as of 09:54:08

2012; right? 09:54:11

A. Yes, that's correct. And we had already been 09:54:12

working on that, and some of the -- many of the types 09:54:15

of errors that we were able to pin down even more 09:54:19

precisely as we got better datasets were things we 09:54:23

already knew about earlier and had identified, and so 09:54:27

that led to the approaches that we outlined on the -- 09:54:31

on the slide for how we would go about it. 09:54:39

Q. And the datasets that are referenced in Slide 09:54:41

9 were to be used to help you characterize errors as 09:54:48

referenced in Slide 5; right? 09:54:54

A. It was to improve the characterization. It 09:54:57

isn't that we didn't have any characterization, but it 09:54:59

was to make a more comprehensive dataset than the one 09:55:02

we had so far, and it did make a better dataset. 09:55:08

Q. Now, as of May 8, 2012, you hadn't yet 09:55:12

downloaded all of the datasets that are listed in the 09:55:17

Foresight EX1222
Foresight v Personalis
IPR2023-00317

middle column of Slide 9; correct? 09:55:21

MR. LUMAN: Objection; foundation. 09:55:23

THE WITNESS: So as of the May 8th board meeting, we had begun to download some of those datasets, but we continued to download the data from the Broad Institute for an extended period of time, and that was partly because the Broad Institute continued to generate additional data. But we had downloaded those genomes, and we were looking at other genomes, as I mentioned, from the Korean personal genome project as well. 09:55:27 09:55:31 09:55:33 09:55:39 09:55:40 09:55:45 09:55:48 09:55:52 09:55:56

BY MR. HEINRICH: 09:55:58

Q. And that was all, sort of, underway, but in process; correct? 09:55:59 09:56:01

A. Yes, and we also -- 09:56:02

Q. I'm sorry. Did you -- 09:56:04

MR. LUMAN: Let the witness complete his answer. 09:56:05 09:56:07

BY MR. HEINRICH: 09:56:07

Q. Can you answer my question? That was underway, but in process; right? 09:56:08 09:56:10

A. No. I would say we had analyzed some data, and we had some understanding of the issues. We had also collaboration with the group at Stanford University. They had access to other genomes. 09:56:11 09:56:16 09:56:20 09:56:25

Foresight EX1222
Foresight v Personalis
IPR2023-00317

So, for example, Mike Snyder, who is the chairman of the genetics department at Stanford and a cofounder of the company, had -- had his sequence -- his genome sequenced multiple times using both the Illumina technology and also the technology of another company named "Complete Genomics" and had compared those, and we had also worked on understanding the errors that came about from that. 09:56:28 09:56:32 09:56:36 09:56:39 09:56:43 09:56:48 09:56:50 09:56:52

I, also, had access to other more modern genomes because I had friends at Illumina, and they had sequenced other genomes, and so I received copies of some of those genomes, and we used those as part of our analysis. 09:56:56 09:57:00 09:57:03 09:57:07 09:57:13

So the analysis progressed, but we were -- I think we had sufficient information for the conception of the ideas that are presented on Slide 5, and as we sought to reduce that to practice and generate our first product, we generated additional datasets to be more thorough. 09:57:14 09:57:17 09:57:20 09:57:26 09:57:30 09:57:34

Q. I'm just right now asking you factual questions. I'm not -- 09:57:36 09:57:39

A. Yes, I understand that. I'm trying to understand them. 09:57:39 09:57:41

Q. -- asking reduction to practice, which are legal terms. I'm trying to get an idea of factually 09:57:42 09:57:44

Foresight EX1222
Foresight v Personalis
IPR2023-00317

what was going on at the company at the time. 09:57:47

A. Okay. That's fine. 09:57:49

Q. On Slide 9, there's also a reference to "custom sequenced datasets"; correct? 09:57:50 09:57:55

A. They were custom sequence that -- meaning that these were datasets that would be sequenced for us as we would pay somebody to do sequencing. These would be -- this -- these were not datasets that we would necessarily share with someone else whereas something we downloaded from the Broad Institute was not -- that wasn't Personalis proprietary. It wasn't custom to us. Anybody could have downloaded those genome sets. 09:58:01 09:58:05 09:58:09 09:58:12 09:58:14 09:58:17 09:58:20 09:58:23 09:58:30

Q. Sure, sure. So for the datasets that would be sequenced for Personalis specifically, those datasets would also be used as part of your efforts to characterize the errors that were found in current sequencing technologies; correct? 09:58:31 09:58:33 09:58:36 09:58:40 09:58:43

MR. LUMAN: Objection; foundation. 09:58:45

THE WITNESS: Yes, that's correct. 09:58:46

BY MR. HEINRICH: 09:58:47

Q. And how many of the custom datasets listed in Slide 9 had already been sequenced for Personalis at this time? 09:58:47 09:58:52 09:58:57

A. The -- I refer to -- it's different for -- 09:58:57

Foresight EX1222
Foresight v Personalis
IPR2023-00317

there are two different groups mentioned. One is 09:59:07
the -- that was called the "CEPH1463" -- that's the 09:59:10
C-E-P-H 1463 -- "family." And most of those 09:59:13
individuals had already been sequenced as part of 09:59:21
the -- what was called the "Thousand Genomes Project" 09:59:24
and others. 09:59:28
These were widely used samples. In fact, 09:59:28
the -- one person in the middle generation of that 09:59:31
group of three generations was the standard sample 09:59:36
that was used in the middle, in the downloading here. 09:59:40
In addition, I mentioned the Craig Venter 09:59:45
genome. Craig Venter was a well known figure in the 09:59:49
field at the time, and his genome, actually, had been 09:59:52
sequenced by his company, Celera Genomics, and that 09:59:55
data was also something we had access to. 10:00:00
So the -- we had access to these other 10:00:03
people's sequencing of those genomes, and we could use 10:00:06
that along with having the genomes sequenced in -- for 10:00:10
us specifically. 10:00:16
Q. As of May 8th, 2012, you didn't, yet, have 10:00:18
access to the custom sequence datasets listed in Slide 10:00:24
9; correct? 10:00:37
A. We were proposing to have those datasets 10:00:37
generated. I would say, though, that the -- a number 10:00:40
of the individuals whose genomes were going to be 10:00:43

Foresight EX1222
Foresight v Personalis
IPR2023-00317

sequenced had already been sequenced by others, and we did have access to some of that data. 10:00:46 10:00:50

So to the extent that we wanted to have a brand-new sequencing done for us with specific parameters that we set and for which we had a budget on Slide 12, none of that sequencing had started yet because we didn't have board approval to spend 158,000 -- $157,000 yet. 10:00:52 10:00:54 10:00:57 10:01:00 10:01:06 10:01:13

Q. That's where I was getting. 10:01:14

A. Yes. And so those new datasets have not, yet, been generated. 10:01:16 10:01:18

Q. And you did receive board approval to obtain those datasets; correct? 10:01:20 10:01:23

A. Yes, we did. 10:01:24

Q. And those datasets were used as part of your efforts to characterize errors in current sequencing technology as part of your accuracy program; right? 10:01:25 10:01:28 10:01:31

A. Yes, they were one element of that. 10:01:34

Q. Is the -- the product or service that you were envisioning was what you referred to as the accuracy program; right? 10:01:51 10:01:54 10:01:56

A. The accuracy program was to develop a set of capabilities, which could lead to a number of products. 10:01:58 10:02:03 10:02:06

At an earlier board meeting, we had described 10:02:07

Foresight EX1222
Foresight v Personalis
IPR2023-00317

at least two of those possible products that could come from the accuracy program. 10:02:10 10:02:13

The accuracy program was in general to understand accuracy challenges, which we viewed as opportunities in nexgen sequencing, and we had discussed two plans for two products. One which we called "Whole Genome Plus" and one which we called "Exome Plus," and those products would be designed to address some of the accuracy problems that we already knew about. 10:02:15 10:02:17 10:02:21 10:02:26 10:02:30 10:02:34 10:02:40 10:02:44

Q. And those were two sequencing products that you envisioned; correct? 10:02:44 10:02:47

A. Yes. Those would have been services, not when you think of a product. "Product" sometimes is a physical thing that you can buy, and I can ship to you. 10:02:49 10:02:53 10:02:58 10:03:01

When we refer to a "product" in that sense, it wasn't, you know, like, a box of something or, like, an instrument. It was a service that we can derive where people could send us those samples. We would sequence them using these methods, and we would return the data to the customer. 10:03:01 10:03:04 10:03:06 10:03:10 10:03:12 10:03:14

Q. Sure, but you often referred to them as "products"; right? 10:03:15 10:03:18

A. Yes, we did. I'm just clarifying it because 10:03:18

Foresight EX1222
Foresight v Personalis
IPR2023-00317

sometimes people get -- the terminology can be a little confusing between what's a product and what's a service. 10:03:21 10:03:23 10:03:26

And to be honest, the company -- we tended to refer to that as our product. And just clarifying that, if you were being more precise about it, you might refer to that more as a service. 10:03:26 10:03:28 10:03:31 10:03:34

Q. Understood, but -- and thank you for the clarification. 10:03:36 10:03:38

Since you refer in your exhibits to it as a "product," I'll probably -- 10:03:40 10:03:43

A. That's fine. 10:03:43

Q. -- be referring to it as a product. 10:03:44

A. That's fine. 10:03:46

MR. LUMAN: If you guys can slow down the questions and answers, that way the record will be more clear. 10:03:48 10:03:50 10:03:52

BY MR. HEINRICH: 10:03:56

Q. So you considered your future potential competitors to be other sequencing companies; right? 10:03:56 10:04:03

A. I think we felt there could be a lot of different future competitors, and they certainly included other people who provided sequencing as a service, and it also would have included companies that would have been described as diagnostic 10:04:06 10:04:11 10:04:15 10:04:18 10:04:22

Foresight EX1222
Foresight v Personalis
IPR2023-00317

companies, providing medical diagnostic testing for medical patients. 10:04:25 10:04:29

Q. Market developments on Slide 4, you list four companies; right? Illuminous [sic] -- well, I guess five. Illumina, slash, Roche; Complete Genomics; Oxford Nanopore; and Lite Ion Proton (phonetic); right? 10:04:31 10:04:39 10:04:43 10:04:50 10:04:55

A. I don't believe we characterized them as competitors. I don't think that we were talking about competitors here. 10:04:55 10:04:59 10:04:59

These are -- those four companies are companies that were developing sequencing technologies, and so we were -- this is describing the market for sequencing technologies, which was an important input to us because, if there were new advances in the sequencing technologies, that would impact what we could do about them. 10:05:01 10:05:02 10:05:05 10:05:08 10:05:12 10:05:15 10:05:18

So Illumina was a sequencing company. At that time, Roche was trying to execute a hostile takeover. That did not go through. 10:05:20 10:05:23 10:05:29

Complete Genomics was another sequencing company. They provided sequencing as a service with their own technology, which was quite different from Illumina's. 10:05:31 10:05:34 10:05:37 10:05:40

Oxford Nanopore was, yet, another company 10:05:41

Foresight EX1222
Foresight v Personalis
IPR2023-00317

based in England. They had another very different technology for DNA sequencing. 10:05:43 10:05:47

And Lise Ion Proton (phonetic) was another -- a large company that had a fourth technology for DNA sequencing. 10:05:50 10:05:53 10:05:56

So these were -- although in some cases, they would provide sequencing as a service. For example, Illumina did, and we were their customer in some cases. 10:05:57 10:06:01 10:06:05 10:06:08

In general these companies were primarily companies making the equipment and reagents that were used for sequencing. These -- these were not primarily diagnostic companies, and these companies' businesses were not primarily sequencing services. 10:06:09 10:06:13 10:06:15 10:06:16 10:06:21

Q. The reason -- 10:06:23

A. So I'm just getting at -- that's why I'm saying you characterize these as "competitors," and I would say these were not our primary competitors. 10:06:25 10:06:30 10:06:34

Q. The reason that you listed these four sequencing companies in your slide to the board titled "Market Developments" is because you were presenting the board with an update on the Personalis accuracy program that was designed to result in products for sequencing such as your Whole Genome Plus and Exome Plus products you contemplated; correct? 10:06:37 10:06:40 10:06:44 10:06:50 10:06:55 10:07:01 10:07:08

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. Yes. So understanding developments in the market for sequencing technologies was important because, if the sequencing technologies that we used or that were available to us changed or improved in some way, it was important for us to know about that. 10:07:10 10:07:13 10:07:16 10:07:18 10:07:21

Q. Right. Now, you didn't present the board with an update on market developments and cancer diagnostics, correct, in this presentation? 10:07:24 10:07:28 10:07:33

A. Not that I recall, no. 10:07:37

Q. And that's because, in part, Personalis's expertise was in sequencing and not cancer biology; correct? 10:07:41 10:07:49 10:07:54

A. No. I think we had people who were knowledgeable about cancer. For example, Richard Chen, who is our chief technology officer, was a physician, and some of the patients that he sees are people with forms of cancer or precancer related to melanoma. So I think we knew things from a medical standpoint. 10:07:54 10:07:58 10:08:01 10:08:05 10:08:10 10:08:14 10:08:18

Certainly, over my career, I had worked extensively on cancer genomics. And so I think we knew quite a bit about that. 10:08:19 10:08:22 10:08:28

And there were presentations that talked about the market for diagnostic testing, and those presentations were made -- I don't remember whether 10:08:29 10:08:32 10:08:36

Foresight EX1222
Foresight v Personalis
IPR2023-00317

they were at this board meeting or at some of the earlier board meetings. 10:08:39 10:08:41

If I recall, Rich Chen gave a presentation earlier in the year than this, which includes some description of the different markets, including research-related markets and clinical diagnostic markets, and it included applications that included Mendelian diseases, what were called "genetically complex diseases," and cancer. 10:08:43 10:08:47 10:08:50 10:08:54 10:08:59 10:09:02 10:09:13

Q. It's fair that in this period of time cancer genomics was not the forte of Personalis; correct? 10:09:16 10:09:18

A. No, I think that's a mischaracterization of it. I think we had many people with substantial knowledge of cancer genomics. 10:09:22 10:09:24 10:09:27

Q. So if you turn to Exhibit 2063. 10:10:01

THE REPORTER: -63? 10:10:01

MR. HEINRICH: Yes, please. 10:10:01

(Exhibit 2063 was marked for identification.) 10:10:01

BY MR. HEINRICH: 10:10:01

Q. This is an e-mail. 10:10:16

MR. LUMAN: Give us a minute to get there. 10:10:18

THE WITNESS: 2063. To confirm, this is an e-mail that I sent to Richard Chen, Carol Tillis, and Christian Haudenschild that says, "Draft board slides for your comments." 10:10:37 10:10:42 10:10:46 10:10:49

Foresight EX1222
Foresight v Personalis
IPR2023-00317

This was on Monday, June 11, 2012. 10:10:50

BY MR. HEINRICH: 10:10:53

Q. Correct. And one of the issues you 10:10:53

explore -- you explored in these slides was potential 10:11:05

synergies with some kind of combination with Complete 10:11:14

Genomics sequencing company we just mentioned a few 10:11:19

minutes ago; right? 10:11:25

A. Do you want to point me to where specifically 10:11:26

you have in mind? 10:11:29

Q. Sure. So you can take a look at some slides 10:11:30

starting at Slide 11. 10:11:33

A. Okay. I'm looking at Slide 11. 10:12:12

Q. Does this refresh your recollection that in 10:12:16

this slide deck -- why don't you take a look at Slides 10:12:18

11, 12, and 13. 10:12:21

A. Okay. I have to understand your question 10:12:56

before I can go further. 10:12:58

Q. Yeah, I just wanted to point you to the 10:13:00

slides. 10:13:05

So does this refresh your recollection that 10:13:06

one of the things you did in your board deck for the 10:13:08

June 2012 board meeting was to throw out some ideas 10:13:11

about potential synergies doing some sort of 10:13:16

combination with Complete Genomics? 10:13:20

A. So that's the -- it shows that we were 10:13:22

Foresight EX1222
Foresight v Personalis
IPR2023-00317

looking at different possibilities. It wasn't a proposal that we should do that. But we were considering whether there were ways we could accelerate what we were doing by some kind of a business combination. 10:13:25 10:13:31 10:13:34 10:13:36 10:13:39

Q. And let's turn to Slide 13. 10:13:40

A. I'm looking at Slide 13. 10:13:51

Q. In the second-to-last bullet, in this bullet you're discussing the possibility of combining Personalis's noncancer expertise with Complete's cancer genome experience and deep genome dataset; correct? 10:13:53 10:13:58 10:14:03 10:14:10 10:14:11

A. Yes, that's what it says. 10:14:13

Q. Okay. 10:14:13

MR. HEINRICH: Why don't we take our next five-minute break? 10:14:15 10:14:17

THE VIDEOGRAPHER: Okay. We're going off the record. The time is 10:14 a.m. 10:14:18 10:14:20

(Recess taken.) 10:21:14

THE VIDEOGRAPHER: We're back on the record. The time is 10:22 a.m. 10:21:14 10:22:14

BY MR. HEINRICH: 10:22:16

Q. Mr. West, did you have any discussions with counsel at the break? 10:22:17 10:22:19

A. No, I did not. And I would like to 10:22:20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

supplement my answer to a couple of the last questions if we can take a second with that. 10:22:22 10:22:26

Q. You can do that on redirect. 10:22:28

MR. LUMAN: The witness says his answers are not complete -- 10:22:30 10:22:32

MR. HEINRICH: Well, that's not what he said. 10:22:33

MR. LUMAN: -- and he would like an opportunity to do that. 10:22:35 10:22:38

MR. HEINRICH: -- don't coach the witness. 10:22:41

THE WITNESS: I can phrase it the way you want it phrased. I think my answer was not complete, and I think that your questions -- the last few questions you asked, whether there was cancer sequencing expertise at Personalis and implies that there was not, I would say that's not correct, and I wanted to illustrate that with a couple of points. 10:22:43 10:22:45 10:22:50 10:22:52 10:22:59 10:23:00 10:23:01 10:23:03

I had been involved in DNA sequencing starting in 1982 when the initial project to sequence the human genome was started. It was actually under the U.S. Department of Energy with the U.S. National Laboratories. 10:23:04 10:23:06 10:23:10 10:23:13 10:23:18

And in 1986, when they laid out the motivation for sequencing the human genome, they listed seven different diseases. And the Number 1 10:23:18 10:23:21 10:23:24

Foresight EX1222
Foresight v Personalis
IPR2023-00317

disease on the list that they focused on as the benefit for sequencing the human genome the first time was cancer, and I was involved in developing the systems for that. 10:23:32 10:23:32 10:23:35 10:23:37

When I was at Applied Biosystems, which was between 2001 and 2004, the -- I led the marketing of the DNA sequencing business, and in particular repositioned that business from the sequencing of species, which had not been sequenced before, to the resequencing of genomes that had already been sequenced to identify variants. 10:23:38 10:23:43 10:23:49 10:23:52 10:23:57 10:24:02 10:24:06

And in particular, we developed and launched products specifically for the sequencing of cancer, and we introduced those as early as 2002. 10:24:08 10:24:10 10:24:12

So by the time that we're talking about here, I had been involved in developing and commercializing products for cancer sequencing for over a decade. 10:24:15 10:24:18 10:24:22

BY MR. HEINRICH: 10:24:28

Q. So going back to Slide 13 of Exhibit 2063. 10:24:29

A. Yes, I'm looking at that. 10:24:49

Q. This is from your own slide deck in June of 2012; correct? 10:24:50 10:24:57

A. Yes, that's correct. 10:24:58

Q. And in your slide deck in June 2012 -- 10:24:59

A. Yes. 10:25:03

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. -- you were contemplating potential synergies of a combination with Complete Genomics; correct? 10:25:03 10:25:09

A. Yes, that's correct. 10:25:13

Q. And you said in your slide deck: 10:25:14

"Combining Personalis noncancer expertise with Complete's cancer genome experience and deep genome dataset could be a potential synergy"; correct? 10:25:16 10:25:21 10:25:24 10:25:27

A. Yes, that's correct. But that does not imply that Personalis -- 10:25:30 10:25:33

Q. That -- 10:25:33

MR. LUMAN: You can't cut the witness off. 10:25:35

MR. HEINRICH: There's no pending question. 10:25:37

MR. LUMAN: Let him complete his answer. 10:25:39

THE WITNESS: At the beginning of this session, we said that we would not talk over each other. So if you would not talk over me while I'm answering, I'd appreciate that. 10:25:41 10:25:43 10:25:46 10:25:50

If I can finish my answer, I'd like to do that. 10:25:50 10:25:53

MR. LUMAN: Please. 10:25:53

THE WITNESS: So the -- at the time we were considering combining with Complete Genomics, we, in fact, did decide not to do that. 10:25:54 10:25:56 10:26:00

But Personalis had multiple staff that had 10:26:02

Foresight EX1222
Foresight v Personalis
IPR2023-00317

expertise in cancer sequencing. That doesn't mean that it wouldn't be helpful to have even more. 10:26:05 10:26:08

Personalis had certain datasets, but it would be helpful to have other datasets, and Personalis also had expertise in other areas of cancer -- in other areas of genomics, including areas outside of cancer that we felt Complete Genomics did not have, including, for example, in cardiology. 10:26:11 10:26:15 10:26:19 10:26:21 10:26:25 10:26:30

And so we felt that combining our areas of expertise with theirs, it doesn't mean we had no expertise in cancer, and it doesn't mean that they had all the expertise in that, and it also doesn't mean that they didn't have any expertise in areas outside of cancer, but we did feel that there was the possibility of adding both staff and datasets and technology. 10:26:31 10:26:33 10:26:37 10:26:40 10:26:43 10:26:48 10:26:51 10:26:53

So I just want to be on the record that this -- my slides -- these are my slides. So I'll speak to them -- from the June 2012 board meeting were an indication of a way to add to our capabilities, not an indication of a lack of capabilities. 10:26:54 10:26:56 10:27:00 10:27:06 10:27:11

MR. HEINRICH: Move to strike as nonresponsive to my question. 10:27:15 10:27:17

MR. LUMAN: That was very responsive. I disagree with that. 10:27:18 10:27:21

Foresight EX1222
Foresight v Personalis
IPR2023-00317

MR. HEINRICH: I don't care. 10:27:23

BY MR. HEINRICH: 10:27:25

Q. You would never -- you -- you would never have said that cancer genomics is not the forte of Personalis's founders; right? 10:27:25 10:27:27 10:27:33

A. I do not agree with your statement. 10:27:35

Q. Let's turn back to Slide 5 of Exhibit 2112. 10:27:42

A. I'm looking at Slide 5 of Exhibit 2112. 10:28:52

Q. Okay. So let's just talk a little bit about some terms you use here first. 10:28:57 10:29:07

So in the third column, the middle, there's a reference to -- the third column is titled, "Lab Content Solutions"; correct? 10:29:10 10:29:16 10:29:20

A. Yes, it is. 10:29:22

Q. And there's a reference in the middle of that column to "pull out"; correct? 10:29:23 10:29:26

A. Yes, there is. 10:29:33

Q. What is a "pull out"? 10:29:34

A. Pull out -- a "pull out" refers to a method of using hybrid capture to bind to a particular part of the genome and to pull that out of the solution. 10:29:59 10:30:05 10:30:15

So if you have DNA molecules, which are floating in solution mixed in with other molecules, if you want to select just molecules from certain parts of the genome, you can hybridize them with capture 10:30:19 10:30:23 10:30:27 10:30:30

Foresight EX1222
Foresight v Personalis
IPR2023-00317

probes, which have a chemical modification on them, which allows them to be pulled. 10:30:38 10:30:42

Most commonly that's done by adding a chemical element onto the capture probe with what is called "biotin." And biotin binds to another chemical called "streptavidin." And streptavidin, then, is often on magnetic beads. 10:30:46 10:30:49 10:30:54 10:30:59 10:31:03

So if you hybridize those probes to the DNA, which is in solution, and then apply a magnetic field externally, you can pull those molecules and literally pull them out of the solution so that you can selectively capture those portions of the genome. 10:31:05 10:31:08 10:31:12 10:31:16 10:31:18

Q. Are you aware of any pullout probes that don't employ any chemical modifications? 10:31:22 10:31:26

MR. LUMAN: Incomplete hypothetical. 10:31:33

THE WITNESS: I would say that the pullout probes that we were considering using at the time and which we, in fact, did use were from Agilent. They were the SureSelect technology. 10:31:34 10:31:37 10:31:40 10:31:47

They had developed that technology actually with my group's help when I was at Celexa, and I believe that technology uses the biotin and streptavidin magnetic bead approach. 10:31:54 10:31:54 10:31:55 10:32:01

BY MR. HEINRICH: 10:32:03

Q. So the biotin is part of the pullout probe; 10:32:03

Foresight EX1222
Foresight v Personalis
IPR2023-00317

correct? 10:32:08

A. It is part of the capture probe, and it makes it essentially, like, a sticky piece that would stick selectively to streptavidin, and streptavidin would be used to coat the magnetic beads. 10:32:09 10:32:14 10:32:18 10:32:22

Q. Why -- so I asked you if biotin is part of the pullout probe, and then you said it was part of the "capture" probe. I'm wondering why you changed my question that way. 10:32:25 10:32:30 10:32:33 10:32:36

A. Because the -- sorry. I wasn't trying to intentionally change your question. 10:32:37 10:32:40

But I would say that we considered hybrid capture to be done with a pullout probe because we were describing the technology that we planned to use, which was the Agilent SureSelect technology, and it used capture probes, which were also referred to as pullout probes because they use the -- the pull was the magnetic field pulling on the beads. 10:32:41 10:32:44 10:32:52 10:32:55 10:33:00 10:33:03 10:33:06

Q. The pull was the combination of the biotin on the probe and the bead; correct? 10:33:09 10:33:12

A. And the magnetic bead and the magnetic field, yes. 10:33:14 10:33:19

Q. Now, an "array," does that refer to a different type of capture probe? 10:33:19 10:33:23

A. I think you would have to tell me. The word 10:33:26

Foresight EX1222
Foresight v Personalis
IPR2023-00317

"array" is used in many different contexts. 10:33:30

Q. Well, well -- okay. Let's go back to Slide 5. 10:33:34 10:33:37

A. Okay. 10:33:37

Q. Right above "pull out," there's a reference to "array"; correct? 10:33:37 10:33:40

A. Yes, there is. 10:33:41

Q. As you use it in Slide 5 of Exhibit 2112, does "array" refer to a different type of capture probe? 10:33:44 10:33:51 10:33:54

A. No. Where we refer to an "array" there, we were referring to a technology that was used for genotyping. These were made both by Illumina and Affymetrix, for example. 10:33:55 10:33:59 10:34:04 10:34:10

And it specifically says here in parenthesis, genotypes and SVs, which means "structural variants." 10:34:13 10:34:16

So these were variants at specific genetic loci that would be targeted in the genotyping process, and so there were genotyping arrays that were used, and the data from those arrays could be used to identify whether a particular genetic mutation existed in that sample or not. 10:34:21 10:34:24 10:34:27 10:34:31 10:34:38 10:34:42

And the fluorescence data from those arrays could also be used to identify certain structural variants. So it's different from the pull out that we 10:34:44 10:34:46 10:34:51

Foresight EX1222
Foresight v Personalis
IPR2023-00317

were talking about in the line below that, which was really intended more for a sequencing process. 10:34:54 10:34:56

Arrays are not -- do not use nexgen sequencing. The arrays we were talking about were ones where nexgen sequencing would not be involved. 10:34:59 10:35:02 10:35:06

Q. An array includes a set of capture probes on a solid support; fair? 10:35:18 10:35:22

MR. LUMAN: Incomplete hypothetical. 10:35:25

THE WITNESS: The arrays that were used for genotyping were not for the purposes of capturing molecules for sequencing. They were -- we were -- when we were talking about pull out, the word "pull out" implies that you're pulling the molecules out of solution, which means that the molecules are in solution, and that you would pull them out of the solution by that. 10:35:27 10:35:31 10:35:35 10:35:38 10:35:41 10:35:45 10:35:47 10:35:51

Typically, when you talk about a genotyping array, you are not trying to pull molecules out for then subsequently sequencing them. You're -- actually, the molecules would stay stuck to the array, and the fluorescence on them would be analyzed by imaging them on the surface of the array itself, not by sequencing them. 10:35:52 10:35:54 10:35:59 10:36:00 10:36:03 10:36:06 10:36:10

BY MR. HEINRICH: 10:36:12

Q. I'm not saying that arrays use what you refer 10:36:12

Foresight EX1222
Foresight v Personalis
IPR2023-00317

to as pullout probes. I'm asking you if you'd agree that arrays use capture probes on a solid support? 10:36:15 10:36:20

MR. LUMAN: Incomplete hypothetical. 10:36:26

THE WITNESS: I think that it's a -- not a helpful description of the technology because it's not what we were talking about in this slide. 10:36:27 10:36:31 10:36:35

Some of these terms are used by different people in the art in different context to mean different things, but the -- when we referred to "arrays" here, it wasn't just another method of doing pull out. It was a different technology that was a nonsequencing technology whereas, when we referred to "pull out," that was the -- what we were really talking about was the Agilent SureSelect capture system, and that's what we designed in, and we had discussed with our board as early as July of 2011. 10:36:38 10:36:40 10:36:44 10:36:49 10:36:53 10:36:56 10:36:59 10:37:03 10:37:07 10:37:10

BY MR. HEINRICH: 10:37:16

Q. Okay. Let's put aside -- well, first of all, whether or not the purpose was for subsequent sequencing steps, you are aware that arrays included probes that were used to capture DNA molecules; right? 10:37:16 10:37:21 10:37:27 10:37:35

MR. LUMAN: Lacks foundation, incomplete hypothetical. 10:37:42 10:37:45

THE WITNESS: I don't think that that's what we were talking about when we referred to "pull out" 10:37:45 10:37:47

Foresight EX1222
Foresight v Personalis
IPR2023-00317

here, and so you can propose many different circumstances that have nothing to do with what we were doing. 10:37:50 10:37:54 10:37:57

What I can say is that the -- there had been -- earlier in the development of these technologies, there had been companies that used surface arrays as a method of capturing molecules, which were, then, released for sequencing, and that didn't work very well. 10:37:58 10:38:01 10:38:05 10:38:11 10:38:15 10:38:18

It worked. People did publish things, but it was not nearly as sufficient as the in solution methods. And so what we were talking about with our board of directors here was that the arrays would be used, not for sequencing, but for genotyping and structural variant determination, and that we would use in solution hybrid capture, specifically using the Agilent SureSelect system for -- to provide as part of the sample prep for the DNA sequencing that we were going to use. 10:38:20 10:38:23 10:38:28 10:38:30 10:38:32 10:38:35 10:38:38 10:38:42 10:38:47 10:38:51

BY MR. HEINRICH: 10:38:59

Q. I guess I wonder if we're talking past each other. 10:38:59 10:39:04

You're familiar with the term "capture probe"; correct? 10:39:05 10:39:07

A. Yes, I am. 10:39:08

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. Now, when you -- at the time, when you were developing this work, you were not using the term "capture probe" to be synonymous with "pullout probes"; correct? 10:39:09 10:39:14 10:39:20 10:39:25

A. What we planned to implement in our system was to use pullout probes using the Agilent SureSelect system. That was the type of capture probe we planned to use, and we had described that to our board, and we had discussed that in internal methods. 10:39:26 10:39:33 10:39:39 10:39:43 10:39:44

We had experience. One of our cofounders, Euan Ashley, had developed an Agilent SureSelect panel and talked about it in our board meeting in July of 2011, for example. 10:39:49 10:39:53 10:40:01 10:40:04

I was quite familiar with both of the technologies we were talking about because I had worked -- when I was at Celexa as a CEO, we worked closely with the people at Agilent and the Broad Institute, who developed what became the SureSelect technology. We probably did some of the first sequencing using that technology. 10:40:04 10:40:06 10:40:09 10:40:14 10:40:18 10:40:20 10:40:23

But I was also familiar with arrays where DNA is spotted or synthesized on a surface. When I ran the DNA business at Applied Biosystems in years 2001 to 2004, we developed and commercialized products that were DNA arrays. So I'm familiar with both 10:40:25 10:40:28 10:40:34 10:40:40 10:40:45

Foresight EX1222
Foresight v Personalis
IPR2023-00317

technologies and had been involved in commercializing them. 10:40:48 10:40:51

And so when we were using the term, it wasn't -- we weren't trying to be Webster's Dictionary defining these terms. We were trying to explain to the board what we were trying to do in terms of a product development. 10:40:51 10:40:53 10:40:57 10:41:00 10:41:03

And so even though these terms do get used for different things, that isn't what we were talking about at that board meeting. We were talking about what our product development was going to be. 10:41:04 10:41:06 10:41:09 10:41:11

Q. So you were not contemplating using array-based capture probes with your solution that you're referring to here in Slide 5; correct? 10:41:14 10:41:18 10:41:24

A. We were proposing to do hybrid capture using the Agilent SureSelect system in which the capture probes end up being captured by streptavidin coated magnetic beads, and that that would be -- that's what we would use -- excuse me -- to select portions of the genome that we were interested in. 10:41:27 10:41:32 10:41:39 10:41:45 10:41:46 10:41:49

We were aware of the possibility of using hybridization to arrays, and we were aware of the technical problems with that. And so we were not proposing to use arrays for that purpose. 10:41:52 10:41:57 10:42:03 10:42:06

The arrays do have performance. They are 10:42:09

Foresight EX1222
Foresight v Personalis
IPR2023-00317

still used today for genotyping and structural variant analysis. And so we understood that they could be useful for that, and that's what we were saying here on the slide. 10:42:14 10:42:19 10:42:21 10:42:24

But in terms of our use of capture probes, which is what's described by the word "pull out" here, we were specifically referring to the Agilent SureSelect system. 10:42:25 10:42:28 10:42:31 10:42:34

Q. So you weren't contemplating using arrays to capture DNA for sequencing? 10:42:35 10:42:41

A. That is not what our product plan was, no. We had a better method, which was using the Agilent SureSelect capture probe technology. 10:42:43 10:42:48 10:42:51

Q. Did you ever make any effort to try to use an array to capture DNA for a subsequent sequencing step? 10:42:56 10:42:59

A. There were groups that had done that, and we were certainly familiar with the literature. I don't remember whether anyone in our team previously had experience with that. We had people on our team that had pretty broad experience, and so I don't know whether other members of our team were involved in that. 10:43:04 10:43:08 10:43:10 10:43:14 10:43:17 10:43:21 10:43:24

But I do know that we were -- by that time, we were confident with the approach we wanted to use was to use the Agilent SureSelect system. 10:43:28 10:43:35 10:43:37

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. I'm not asking about the prior experience of anyone on your team. 10:43:40 10:43:42

A. Well, you asked what we contemplated, and if we didn't have the experience to do it, we might not have contemplated that. And I think the experience that those people had helped us to make selections so that we could move more directly to a product. 10:43:42 10:43:46 10:43:49 10:43:54 10:43:59

Q. Do you recall any efforts at Personalis to use an array to capture DNA that was, then, sequenced? 10:44:03 10:44:07

A. The only arrays that were involved in the capture process were that the DNA or the RNA probes that are used in the Agilent SureSelect system come from DNA which is originally synthesized on an array and then cleaved off of the array, and then it's in solution, and then you used it in solution. 10:44:13 10:44:15 10:44:22 10:44:25 10:44:31 10:44:33

So we were not -- we -- we're not planning to make a product based on hybridizing DNA onto an array and then alluding it off the array. 10:44:40 10:44:41 10:44:49

We were obviously aware that that was a possible approach, but when DNA is close to a surface, there can be problems if the DNA folds and then doesn't behave properly. And so the -- it was, I think, reasonably well established by that point that the -- you could achieve better performance by doing hybrid capture in solution. 10:44:52 10:44:54 10:44:58 10:45:01 10:45:04 10:45:08 10:45:12

Foresight EX1222
Foresight v Personalis
IPR2023-00317

And in particular, the three main companies that offered hybrid capture technologies commercially at that point all offered them on the basis of capture in solution using biotin-labeled capture probes captured by streptavidin coated magnetic beads. 10:45:14 10:45:18 10:45:25 10:45:29 10:45:35

That would have included Agilent. It would have included Illumina's hybrid capture technology, and it would have included the NimbleGen hybrid capture technology. 10:45:40 10:45:42 10:45:46 10:45:49

Q. And those were all hybrid capture technologies that were on the market as of 2012; correct? 10:45:50 10:45:53 10:45:57

A. Certainly the Agilent technology had been on the market since at least 2011, and I think maybe a year or two before that. 10:45:57 10:46:01 10:46:05

Illumina had developed an exome that used that technology at least by late in 2012. I don't remember when they introduced that. 10:46:06 10:46:12 10:46:16

And I don't remember the dates on the NimbleGen technology. We didn't use them. But the -- certainly the Agilent SureSelect technology had been on the market before 2011. 10:46:18 10:46:21 10:46:26 10:46:29

Q. Well, if you turn -- we're going to come back to Slide 5, but since you raised this, if you turn back to Slide 4, in one of the market developments, 10:46:37 10:46:44 10:46:47

Foresight EX1222
Foresight v Personalis
IPR2023-00317

you note that Illumina had already released its cancer gene pullout panel; correct? 10:46:52 10:46:57

A. So that would have been using their in solution hybrid capture technology. 10:46:59 10:47:03

Q. And the purpose of the Illumina cancer gene pullout panel was to use these biotinylated probes to pull out DNA for sequencing; correct? 10:47:06 10:47:14 10:47:21

MR. LUMAN: Calls for speculation. 10:47:23

THE WITNESS: Yes, I believe that is correct. I don't know whether -- I don't remember whether they had the ability for a customer to design their own probes at that time, but Illumina had this cancer gene pullout panel released at that point. 10:47:25 10:47:28 10:47:31 10:47:35 10:47:40

BY MR. HEINRICH: 10:47:45

Q. Did you ever try to use PCR primers to capture DNA for sequencing? 10:47:45 10:47:54

A. So in my career, yes, I had certainly done that, and when I worked at Applied Biosystems, we commercialized thousands of PCR primers specifically for that purpose using the old Sanger sequencing. 10:47:56 10:48:00 10:48:07 10:48:11

PCR primer methods are mostly used if you have only one or a small number of genomic targets. The more targets you try to combine in a single reaction the more difficulties there can be of those reactions interfering with each other. 10:48:13 10:48:17 10:48:22 10:48:25 10:48:29

Foresight EX1222
Foresight v Personalis
IPR2023-00317

So I would say it was quite well known at the time that, if you wanted to target a large number of locations, that hybrid capture was a better process for that because you could easily have thousands of probes, if you wanted to, whereas with multiplex PCR, often it was difficult to go beyond relatively small numbers. 10:48:32 10:48:34 10:48:39 10:48:42 10:48:45 10:48:50 10:48:55

And in addition, the PCR primers would need to be synthesized, not -- and they were not synthesized on an array. They had to be synthesized individually. 10:48:56 10:49:03 10:49:08 10:49:12

And so the cost, if you wanted to have a lot of PCR primers, would have been quite high because you have the cost of synthesizing each one separately. 10:49:12 10:49:14 10:49:19

And for PCR, you need two primers. The primers are also chemically different from hybrid capture DNA. So there's quite a few differences. 10:49:23 10:49:26 10:49:28

We felt that there were places where you could use PCR in validation. So, for example, if you use next generation sequencing of a lot of content, and you identified some -- a genetic variant, and you wanted to, then, Sanger sequence it, you might make a PCR reaction just for that one location, amplify that up, and then sequence it on a Sanger sequencer. 10:49:32 10:49:34 10:49:40 10:49:46 10:49:50 10:49:54 10:49:59

And Personalis did buy an Applied Biosystems 10:50:02

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Sanger sequencer for that type of validation, and we did conduct that type of validation on samples for a period of time. 10:50:05 10:50:09 10:50:12

Q. Let's say that you were only interested in a small handful of genomic loci. Let's say two. As of 2012, it was known that PCR would be perfectly adequate for capturing those two loci for subsequent sequencing; correct? 10:50:13 10:50:20 10:50:28 10:50:36 10:50:36

THE REPORTER: Loci? 10:50:36

MR. LUMAN: Incomplete hypothetical. 10:50:49

MR. HEINRICH: Loci, l-o-c- -- c-i. 10:50:45

THE WITNESS: So I would say that the PCR could be used for certain loci. There're also other areas that -- where PCR does not work well. So the answer is, no, that would not be true for all loci. 10:50:51 10:50:53 10:50:57 10:51:00

There are places where, if PCR did work, you could conduct two reactions. You might conduct them separately so they didn't interfere with each other. 10:51:03 10:51:08 10:51:13

But if you wanted to conduct two PCR reactions for two different genomic loci, certainly you could do that. 10:51:15 10:51:19 10:51:23

BY MR. HEINRICH: 10:51:39

Q. So continuing on Slide 5, underneath the reference to "array" and "pull out," there's a heading, "Custom Sample Preps," and under that, 10:51:40 10:51:47 10:51:50

Foresight EX1222
Foresight v Personalis
IPR2023-00317

there's a reference to "Problematic Motifs"; correct? 10:51:55

A. Yes. 10:52:08

Q. Is one example of a problematic -- so when you say, "problematic," you mean problematic for sequencing; correct? 10:52:08 10:52:12

A. They could be problematic in a variety of ways, but certainly we were interested in regions that were difficult to sequence. 10:52:13 10:52:17 10:52:20

Q. And one problematic region for sequencing were repeats; correct? 10:52:24 10:52:28

A. Not all repeats are problematic for sequencing. Certain repeats with certain structure can be difficult for sequencing, but I wouldn't generalize it to say that all repeats are problematic for sequencing, and I'm referring specifically to the sequencing technology of that time. 10:52:34 10:52:38 10:52:41 10:52:43 10:52:47 10:52:51

Q. Okay. Thank you for that clarification. Let me just re-ask the question with your clarification in mind. 10:52:53 10:52:55 10:52:58

For circa 2012, certain repeats were an example of motifs that were problematic for sequencing at the time; is that fair? 10:52:58 10:53:06 10:53:11

A. Yes, that's true. 10:53:13

Q. And so -- well, you know what, let's -- I want to go back to the first column here. 10:53:15 10:53:23

Foresight EX1222
Foresight v Personalis
IPR2023-00317

So we talked about the first column, and the step of characterizing errors in current sequencing technology that you were studying. 10:53:25 10:53:29 10:53:35

At the bottom of Column 1, you identify certain solutions that you would want to prioritize for addressing those errors and other accuracy problems in sequencing at the time; correct? 10:53:37 10:53:43 10:53:48 10:53:52

A. Yes, that's right. 10:53:55

Q. And under "Prioritize Solutions," the first you list is "Bioinformatic Approaches"; correct? 10:53:56 10:54:03

A. Yes, that's what's there. 10:54:07

Q. So one solution to provide more accurate sequencing would involve bioinformatics; correct? 10:54:08 10:54:16

A. Yes. 10:54:21

Q. And you list some of those bioinformatic solutions that you were contemplating at the time in the second column of your slide; right? 10:54:22 10:54:31 10:54:34

A. Yes, that's correct. 10:54:36

Q. And the next two solutions for the accuracy problem in sequencing that you were trying to address that you list here are laboratory approaches and content approaches; correct? 10:54:37 10:54:43 10:54:46 10:54:49

A. Yes. 10:54:55

Q. And you list the laboratory and contact solution that you were contemplating at the time for 10:54:56 10:54:59

Foresight EX1222
Foresight v Personalis
IPR2023-00317

addressing problems in sequencing accuracy in the third column of your slide; correct? 10:55:04 10:55:07

A. Yes, although some of them are also referenced in the second column. 10:55:10 10:55:15

Q. So the second column is not limited to Bioinformatics Solutions? 10:55:26 10:55:30

A. The Bioinformatics Solutions would often leverage specific content to implement those bioinformatic approaches. So you could list them in some cases in both places. 10:55:32 10:55:37 10:55:42 10:55:45

So as an example, on the right-hand column at the bottom under "Content," it refers to gold standard genomes. So these would have been genomes one could refer to as known standard of a certain quality. 10:55:47 10:55:50 10:55:54 10:55:58

But in the second column, near the bottom, it refers to "advances in reference." So this refers to the reference sequence, and we knew there were problems with the human reference sequence. So that's a form of content as well. 10:56:02 10:56:06 10:56:10 10:56:14 10:56:17

And we had developed different reference sequences for people who had different ethnic background. So, for example, one for people whose ethnic background was European, a different one for people whose ethnic background was Asian, and the third one for people whose ethnic background was 10:56:19 10:56:22 10:56:28 10:56:30 10:56:33 10:56:39

Foresight EX1222
Foresight v Personalis
IPR2023-00317

African. 10:56:40

And we found that by trying to align sequence reads to an ethnically appropriate reference sequence, we could -- we could solve some of the accuracy problems. So that would require both an algorithm to use that and the content, which was the specific reference sequence. 10:56:42 10:56:45 10:56:52 10:56:57 10:57:00 10:57:02

Q. And you believe that that would result in more accurate sequencing data? 10:57:04 10:57:08

A. Yes, and we had published on that approach in the publication you pointed me to earlier this morning, the September 15th article from 2011 in "PLOS Genetics." It specifically described the ethnically specific reference sequences. 10:57:10 10:57:14 10:57:16 10:57:22 10:57:29

Q. So we had our discussion about how you were using the Agilent SureSelect pullout probes. How you contemplated using them; right? 10:57:54 10:57:57 10:58:05

A. Yes, we had planned to use them. 10:58:07

Q. And that's an example of a laboratory-based solution to the accuracy problem in sequencing; right? 10:58:09 10:58:15

A. They could be a component of that. 10:58:21

Q. And as you're listing here, the pullout probes would be used as part of the overall work flow that you were contemplating to make either whole genome or whole exome sequencing more accurate; right? 10:58:24 10:58:34 10:58:41 10:58:44

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. Yes. It would be a component of the solution. When we mentioned two possible products, we had mentioned whole genome plus and exome plus, and in both those cases, we would use a standard whole genome or standard exome, and we would supplement those with additional data. 10:58:49 10:58:53 10:58:57 10:59:03 10:59:06 10:59:12

And one of the types of additional data that we planned was to use hybrid capture probes implemented with the Agilent SureSelect technology to capture portions of the genome or other sequences that were not well-represented in the original data. 10:59:13 10:59:15 10:59:18 10:59:22 10:59:25

And as a result, we could fill in the gaps and have -- provide our customers with more thorough coverage of the genetic characterization of their samples than they would get from just using a standard whole genome or standard exome. 10:59:28 10:59:31 10:59:36 10:59:39 10:59:41

Q. So we talked about certain repeats that at the time were problematic for sequencing; correct? 10:59:46 10:59:49

A. Yes. We talked about that earlier. 10:59:51

Q. And so one way you could use the Agilent SureSelect probes would be to target those particular problematic repeats, pull them out, and then sequence that targeted region to supplement the rest of your sequencing data; right? 10:59:53 10:59:56 11:00:01 11:00:09 11:00:13

A. Yes. So, for example, the repeats involved 11:00:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

in Huntington's disease are difficult to sequence, or it had been difficult to sequence. 11:00:21 11:00:25

And when I received my family's genomes in 2010, I looked specifically for that because I was already 46 years old. So many of the possible diseases that you can find by looking at your genome are diseases that happen when you're two years old or younger. So most of those wouldn't be directly relevant to any members of our family. 11:00:28 11:00:33 11:00:35 11:00:38 11:00:43 11:00:45 11:00:47

But Huntington's is a disease which can be late onset, and so being able to -- and it was -- this was a disease that part of our interest was to see if we could see things in our genome that might give us a future view. Is this something we need to worry about for the future? 11:00:51 11:00:53 11:00:55 11:00:59 11:01:03 11:01:07

And when I examined my genome in -- I believe it was April 2010 at the Huntington's locus, there were no sequencing reads there. 11:01:08 11:01:10 11:01:16

And so this was an example that we knew about where there's a known repeat structure. It's called a "VNTR," and the -- we knew about Huntington's, and I knew about the fragile X repeats because my group, when I worked at Applied Biosystems between 2001 and 2004, already had dedicated products aimed at characterizing those genetically on the sequencers 11:01:20 11:01:22 11:01:26 11:01:33 11:01:37 11:01:41 11:01:44

Foresight EX1222
Foresight v Personalis
IPR2023-00317

that we had at that time. 11:01:51

Q. Now, in Slide 5, you don't actually list 11:01:52

examples of regions that you would pull out; correct? 11:02:00

A. We had described some of those regions in 11:02:05

earlier presentations to the board and in earlier, 11:02:14

more detailed technical documents internally. 11:02:16

Q. I'm just talking about Slide 5. In this 11:02:18

slide you don't describe examples of specific regions 11:02:21

to pull out; right? 11:02:25

A. Well, we said that these might be custom 11:02:27

regions for each individual person, and certain 11:02:35

regions would be of interest if they were mutated. 11:02:40

And so in particular, we were interested in 11:02:43

using custom pull out -- this is why it was called 11:02:46

"custom" -- to pull out regions of the genome that had 11:02:50

genetic variants specific to that person. 11:02:55

So, for example, you might conduct whole 11:02:58

genome sequencing on the individual to start with, 11:03:02

perhaps, on their cancer or their tumor, identify 11:03:06

genetic variants in that tumor, and then you might 11:03:09

design capture probes specifically to target the 11:03:14

genetic variants of that person's tumor. 11:03:17

Q. Where is that stated in your slide here? 11:03:20

A. That's what we were talking about when we 11:03:23

talked about -- you can see that there are two 11:03:24

Foresight EX1222
Foresight v Personalis
IPR2023-00317

references in the right-hand column. One talks about semi custom content, and one talks about custom sample preps. 11:03:27 11:03:30 11:03:35

And so those could include -- semi custom could include things where some of the content would be specific to the individual person, and some of the content would be something that, you know, would apply to everybody. And the fully custom preps could be ones where it would apply specifically to that person. 11:03:36 11:03:39 11:03:42 11:03:44 11:03:47 11:03:56

Q. Where -- where do you say that pullout probes would be designed based on a whole genome sequencing step? 11:04:03 11:04:07 11:04:12

A. We said that we would be interested in specific content, and we had described that to identify that content you would often sequence one or more individuals to identify that content, and then you would design capture probes to that. 11:04:12 11:04:18 11:04:24 11:04:27 11:04:31

Q. I'm asking very specifically where is that here in this slide? 11:04:34 11:04:40

A. So I think we're describing here an overall approach, and that would have been one of the implementations of that that we were planning. 11:04:41 11:04:47 11:04:53

Q. There's nothing in the slide, for example, that says, "We're going to identify a particular individual's unique polymorphisms by comparing the 11:04:57 11:04:59 11:05:02

Foresight EX1222
Foresight v Personalis
IPR2023-00317

individual's tumor DNA sequence to a matched normal sample"; correct? 11:05:11 11:05:17

A. I think that, for example, I had already described a few minutes ago here and also to our board that Huntington's disease is an area where in my genome that was a problem because there were no sequencing reads. 11:05:18 11:05:21 11:05:25 11:05:31 11:05:34

So that would have been an example of looking at my genome, identifying a gap in the genomic data, which would be relevant to me because I was of an age where that disease could still affect me, and we could have designed probes to supplement my genome to fill in that gap. 11:05:35 11:05:37 11:05:44 11:05:47 11:05:52 11:05:56

Q. There's no reference to Huntington's disease on Slide 5; right? 11:06:02 11:06:06

A. There's a reference to what are called "VNTRs," which stands for "Variable Number Tandem Repeats." That's a category of genetic variant, which often leads to a class of diseases, and Huntington's and fragile X are two of those diseases. And we had a more thorough list of what all of those were. 11:06:07 11:06:09 11:06:12 11:06:16 11:06:27 11:06:30

Q. That's listed in your informatic solutions column, VNTR? 11:06:32 11:06:36

A. Yes. You can see in the center column there, it says, "VNTR specific," and we also had informatic 11:06:38 11:06:41

Foresight EX1222
Foresight v Personalis
IPR2023-00317

solutions. Where it says, "other algorithms," for example, lobSTR, l-o-b-S-T-R -- l-o-b-S-T-R was an algorithm that had been developed by a third-party group that we were planning to use to analyze data superficially from what are called "STRs," which are the short tandem repeats that are the basis for VNTRs. 11:06:45 11:06:50 11:07:01 11:07:04 11:07:04 11:07:08

These elements were often used together. The bioinformatics would be used to analyze data, but you'd have to have an assay. The laboratory would have to be able to actually generate sequencing data, which, then, could be analyzed. 11:07:15 11:07:17 11:07:21 11:07:25 11:07:27

So these bioinformatic methods were often paired with laboratory methods to make a complete solution. 11:07:29 11:07:33 11:07:41

Q. Do you think a person in this field at the time reading Slide 5 would have been able to develop your NeXT Personal MRD test? 11:07:41 11:07:44 11:07:51

A. I don't think we were saying -- assuming that from one single slide one could make that MRD test. We had been describing to our board and amongst our technical team what we were going to do for over a year. There were many different documents that would compose that. 11:07:54 11:07:57 11:08:03 11:08:08 11:08:11 11:08:16

And so I would say that by the time -- this is a summary. 11:08:16 11:08:19

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Typically, our board of directors was a varying technical -- levels of technological knowledge, often more business knowledge. And so this was a summary of what we were doing. 11:08:20 11:08:23 11:08:27 11:08:29

But what it was summarizing was a more detailed plan and description, which is included in other documents. And one who was skilled would have been able to do that. And, in fact, we had people who were skilled, and we did it. 11:08:31 11:08:34 11:08:39 11:08:43 11:08:47

Q. So do you think that someone, who was knowledgeable in this field, that poured over all of the exhibits in your binder there, the exhibits from your declaration, would have been able to take that knowledge and come up with NeXT Personal MRD test? 11:08:48 11:09:04 11:09:07 11:09:11 11:09:15

A. I think that we had come up with the concepts of NeXT Personal MRD, and I think that's described in the material that's in the declaration and in the exhibits. 11:09:20 11:09:23 11:09:27 11:09:29

And the proof is that we actually, then, did take that. And we had people who had significant experience in this area, but there were certainly other people who were not at Personalis who had similar levels of experience. 11:09:30 11:09:33 11:09:37 11:09:40 11:09:43

And I think with the guidance of the things that we were planning that are described in these 11:09:46 11:09:51

Foresight EX1222
Foresight v Personalis
IPR2023-00317

documents, I think that somebody would have been able to implement something like NeXT Personal, or at least something that was as described in the '033 and '394 patents. Those two patents describe more than just the current NeXT Personal product. 11:09:53 11:09:56 11:10:01 11:10:07 11:10:10

Q. Just focusing on the exhibits that you cite for conception, okay, you think that someone, who is in the field and poured over those exhibits that you pointed to for conception, would have been able to from that disclosure develop NeXT Personal MRD? 11:10:11 11:10:16 11:10:21 11:10:26 11:10:29

MR. LUMAN: Incomplete hypothetical. 11:10:35

THE WITNESS: I think that from that description someone who was skilled in the art would have been able to develop products that were covered by the '033 and '394 patents. 11:10:37 11:10:39 11:10:42 11:10:47

NeXT Personal includes -- is a new product developed more recently, and it also includes other capabilities that were not described in the '394 patent and the '033 patent. 11:10:52 11:10:55 11:10:59 11:11:04

Not surprisingly the technology has advanced. Our knowledge has advanced. We also filed other patents in later years, and we incorporated all of those things when we designed NeXT Personal. 11:11:07 11:11:10 11:11:14 11:11:17

BY MR. HEINRICH: 11:11:20

Q. One -- an example of a feature that's in the 11:11:21

Foresight EX1222
Foresight v Personalis
IPR2023-00317

NeXT Personal, but not in your conception documents or the patents, is tracking 1800 different biomarkers; correct? 11:11:24 11:11:31 11:11:35

A. You could have decided to track 1800 biomarkers based on what we have here. I wouldn't consider that's something that the -- the number 1800 is something that one skilled in the art could have performed normal analysis and decided on based on the guidance we had in 2012 and normal product development. 11:11:35 11:11:39 11:11:43 11:11:46 11:11:50 11:11:54 11:12:00

Q. Why did it take nine years from your 2012 presentation to come up with NeXT Personal? 11:12:03 11:12:08

A. So NeXT Personal was not the only product that we developed based on the accuracy program. We had a number of products over the years. I would say that the -- it was not a question that it took nine years to do it because we weren't working on it for nine years. We were working on other products. 11:12:14 11:12:16 11:12:20 11:12:24 11:12:26 11:12:30

There were multiple products that were enabled by the developments back in 2012, and I would say that there was at that time a significant concern on our board of directors and amongst our management team of the commercial issues, not technical issues, but the commercial issues to do with clinical diagnostic products because of the lack of financial 11:12:33 11:12:36 11:12:40 11:12:45 11:12:49 11:12:53 11:12:57

Foresight EX1222
Foresight v Personalis
IPR2023-00317

reimbursement for those products by health insurance companies. 11:13:00 11:13:04

So Personalis developed a variety of potential products, and we decided to prioritize commercializing the products that we could get paid for first. 11:13:05 11:13:10 11:13:14 11:13:18

So in February of 2014, based on the work that we had done in 2012, we released what was called the "ACE exome." And we sold that both to research customers, to clinical customers where we could be sure that we would be paid and to pharmaceutical customers. 11:13:18 11:13:22 11:13:26 11:13:34 11:13:36 11:13:38

And we followed that over the years by other products, and many of which were used in other applications in cancer. 11:13:39 11:13:41 11:13:44

Q. There is no disclosure in Slide 5 of sequencing multiple samples taken at different time points from the same individual, is there? 11:13:46 11:13:52 11:13:58

A. I think there's disclosure about that on Slide 3. You can see that the -- the reference to the Snyder paper, and we specifically talk about -- let me turn to Slide 3 so I can quote it correctly. 11:14:00 11:14:03 11:14:07 11:14:11

On Slide 3, if you're looking at it, it says, "Publications and Upcoming Presentations." 11:14:22 11:14:24

We refer to a seminal paper by Mike Snyder 11:14:26

Foresight EX1222
Foresight v Personalis
IPR2023-00317

and team published in "Cell," which is a premiere journal, "ongoing clinical use of genome scale sequencing, not just a genome once in your life." 11:14:30 11:14:34 11:14:38

And so that specific paper, which I think we also have included as an exhibit, is one where we talk specifically about sequencing an individual person at many time points in their life. 11:14:41 11:14:44 11:14:48 11:14:52

In that particular paper, the individual was -- had sequencing data developed at, I believe, 20 time points over an extended period of time. 11:14:55 11:14:58 11:15:02

Q. That was not proprietary Personalis research; correct? 11:15:05 11:15:09

A. But the -- 11:15:10

Q. Can you answer my question? 11:15:11

A. I'm trying to. 11:15:14

Q. That was not proprietary Personalis research; correct? 11:15:16 11:15:21

A. So Mike Snyder's publication was published in a scientific journal. So that was not proprietary to Personalis. 11:15:21 11:15:25 11:15:29

We realized that we could implement that using the technologies described on Slide 5, and that the combination of those things could be powerful, and that is, for example, something that we have implemented in the NeXT Personal product because NeXT 11:15:30 11:15:34 11:15:37 11:15:40 11:15:43

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Personal involves sequencing genetic material from an individual at multiple time points. 11:15:47 11:15:51

Q. So the Snyder paper, that did not -- that was not work that was done at Personalis; correct? 11:15:53 11:16:00

A. No. 11:16:02

Q. And you did not state in Slide 5, "Hey, you know, there's this seminal paper from a different group, and we could apply technologies listed here to sequence multiple samples from an individual, the same individual, taken at subsequent time points; correct? 11:16:03 11:16:07 11:16:12 11:16:18 11:16:24

A. We didn't feel an obligation to put every idea all on one slide. We found it easier to describe to our board of directors what we were doing by having a slide presentation with multiple slides. Different elements of what we were doing were on the different slides. 11:16:31 11:16:34 11:16:38 11:16:42 11:16:45 11:16:47

You asked me about the sequencing of individuals at multiple time points, and so the place in this presentation where we discussed that was on Slide 3. 11:16:48 11:16:49 11:16:52 11:16:55

Q. Right, and you discussed it as something the different group was doing; correct? 11:16:56 11:16:59

A. I'm sorry? 11:17:00

Q. You discussed it as something a different group was doing? 11:17:01 11:17:04

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. No. We discussed it as something where they had done something, and we realized that this was something that could be useful to us. 11:17:04 11:17:08 11:17:12

And in particular, it was a change in the business model because, if you thought about whole genome sequencing the way it had been done, for example, with my family, normally you would have sequenced our genomes once and then been done. 11:17:14 11:17:17 11:17:20 11:17:23 11:17:25

And so John West would not have been a repeat customer for Illumina for sequencing my genome because there was no point in sequencing my genome again and again and again the way that they were doing that. 11:17:29 11:17:32 11:17:35 11:17:39

And so that's a business problem if your customers are one-time customers rather than repeat customers. 11:17:41 11:17:43 11:17:48

And so what we realized was that we could use this idea of having valuable sequencing at multiple time points, and that this would change the economics of our business by having customers where, once you started with a customer, it would be advantageous to sequence them at multiple time points, and so there would be a recurring revenue stream. 11:17:48 11:17:51 11:17:57 11:17:59 11:18:02 11:18:10 11:18:13

So that's -- that's a bit more of a business point as opposed to a technological point. So, then, we were describing that -- that concept here. 11:18:16 11:18:16 11:18:16

Foresight EX1222
Foresight v Personalis
IPR2023-00317

And then, when we were describing the specific technologies we might use of the different time points, that was more described in Slide 5. 11:18:18 11:18:19 11:18:21

Q. You're not describing any different time points in Slide 5, are you? 11:18:31 11:18:34

A. What we're describing are technological methods that we could use over multiple time points, and we had, just two slides earlier, described to our board that it would be useful, and from a business standpoint, could be useful to sequence individuals at multiple timelines. 11:18:36 11:18:38 11:18:43 11:18:45 11:18:47 11:18:52

Q. And you described that to the board in the context of someone else's published research? 11:18:53 11:18:55

A. No. We discussed it as something that would be useful for us. 11:18:59 11:19:01

Q. Well, that's not on Slide 3, is it? 11:19:02

A. We didn't -- we didn't, generally, in our board, just discuss interesting scientific paper that was irrelevant to us. We were clearly describing it to our board because we thought it was relevant to what we were doing and to what our plans were, not just that we were making observations about interesting scientific research done that was not related to our -- our company. 11:19:05 11:19:07 11:19:12 11:19:17 11:19:20 11:19:22 11:19:27 11:19:27

So we clearly were highlighting it, and we 11:19:28

Foresight EX1222
Foresight v Personalis
IPR2023-00317

called it a "seminal paper" because we thought it was relevant to our business. 11:19:30 11:19:33

Q. The accuracy program that's described in Slide 5, a program to come up with a product that provided more accurate sequencing, not a product that tracked the course of diseases over time; correct? 11:19:38 11:19:43 11:19:49 11:19:55

A. No, that's not correct. 11:19:58

Q. Okay. 11:20:01

A. We did not describe the accuracy program just on Slide 5. We had been describing the accuracy program in multiple presentations to our board. There are numerous slides included in this presentation that highlight different aspects of the accuracy program. 11:20:01 11:20:05 11:20:09 11:20:12 11:20:15

And it is important to understand that certain genetic features only become visible over time, and when they become visible, that's valuable. 11:20:18 11:20:23 11:20:27

So we were describing a program that could include the technological methods that are listed on Slide 5 and elsewhere, and that those could be done over time. 11:20:31 11:20:33 11:20:39 11:20:42

Q. What were the cancer diagnostic companies that you thought would be your competitors as of 2012? 11:20:45 11:20:49

A. So there were a fair number of companies that had cancer diagnostic tests as of 2012, and we were aware of many of them. They included Foundation 11:20:52 11:21:08 11:21:16

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Medicine. They included Genomic Health, for example. They included cancer diagnostic tests that were performed by Labcorp, and I could think of others. But that would be an example of three of the companies that we're aware of. 11:21:23 11:21:27 11:21:32 11:21:38 11:21:41

Q. Did you list in any of your exhibits Foundation Medicine as a potential competitor to Personalis? 11:21:42 11:21:50 11:21:52

A. I don't remember the second. We could look through those documents if you want. 11:21:53 11:21:59

Foundation Medicine is certainly a company -- I became aware of Foundation Medicine in April of 2010 when I attended a genome sequencing related conference held at MIT, and Foundation Medicine had been spun out of MIT in late 2009. And they were talking with someone about -- that they had financed that, and this became a company that we paid attention to. 11:22:01 11:22:04 11:22:09 11:22:12 11:22:17 11:22:23 11:22:27

So, yes, we were absolutely aware of Foundation Medicine as a cancer diagnostic company that we would need to compete with in that space. 11:22:29 11:22:31 11:22:36

Q. Sitting here now, you can't point me to any documentation that you were actually contemplating competing with Foundation Medicine circa 2012? 11:22:44 11:22:47 11:22:50

A. We could take time to walk through it. I haven't thought about that in a long time. So it may 11:22:54 11:22:58

Foresight EX1222
Foresight v Personalis
IPR2023-00317

well be in these documents here. The documents weren't prepared to provide a competitive analysis at that time. So I don't know whether we would find that or not. 11:23:01 11:23:05 11:23:09 11:23:11

I know that we were certainly aware of Foundation Medicine and other companies partly because, if you recall, I had been running this -- companies that provided the DNA sequencing equipment to almost everybody in the cancer diagnostic space. 11:23:12 11:23:14 11:23:18 11:23:20 11:23:26

So we knew these people because they were our customers. So it's certainly something we had a lot of awareness of. 11:23:30 11:23:36 11:23:39

Q. Let's turn to Exhibit 2046. 11:23:44

(Exhibit 2046 was marked for identification.) 11:23:44

THE WITNESS: 2046? 11:23:50

BY MR. HEINRICH: 11:23:52

Q. Yep. 11:23:52

A. So just to be clear, this looks like a document, and starting with an e-mail that I sent to Mark Pratt and others Friday, January 6, 2012. 11:24:30 11:24:33 11:24:36

Is that what you're asking to point to? 11:24:42

Q. Yes. Why don't you turn to Slide 11. 11:24:45

MR. LUMAN: Just for clarity, do you want us to be at the page that has a dot 11? 11:24:56 11:24:59

MR. HEINRICH: Yes. 11:25:03

Foresight EX1222
Foresight v Personalis
IPR2023-00317

THE WITNESS: So is this the slide that is titled "Examples of Known Error Mechanisms"? 11:25:08 11:25:11

Is that the one you want me to point to? 11:25:25

BY MR. HEINRICH: 11:25:25

Q. Yes. 11:25:25

THE REPORTER: Known? 11:25:25

THE WITNESS: Known, k-n-o-w-n. "Examples of Known Error Mechanisms." 11:25:12 11:25:13

BY MR. HEINRICH: 11:25:13

Q. So the error mechanisms that you're referring to here were mechanisms that resulted in sequencing errors; correct? 11:25:26 11:25:29 11:25:39

A. Yes. 11:25:40

Q. And some of those mechanisms that led to sequencing errors in 2012 were, for example, low or no coverage due to GC bias; right? 11:25:40 11:25:48 11:25:53

A. Yes. GC bias was considered to be an error mechanism because in regions of the genome that had high percentage of Gs and Cs, those reads might not be very well represented in the data, and you might not have enough data to detect genetic variants in those regions. 11:25:57 11:26:02 11:26:10 11:26:15 11:26:16 11:26:21

Q. And one of your ideas was to use Agilent probes to pull down regions of higher GC content and separately sequence them? 11:26:22 11:26:30 11:26:40

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. Yes. We knew that regions of the genome that had different amounts of GC content could be sequenced, but sometimes the conditions that would allow you to sequence with a medium percentage GC would be different from the conditions required for the high GC. 11:26:43 11:26:47 11:26:51 11:26:54 11:26:58 11:27:01

So if they were captured separately, you could -- you could use one set of sequencing conditions to sequence the bulk of the genome or the exome, and you could use specialized conditions such as higher temperature or higher salt concentrations to sequence the regions that had high GC content. 11:27:03 11:27:07 11:27:11 11:27:12 11:27:15 11:27:20

So, yes, we specifically described a set of capture probes that would capture the high GC content of -- that we were interested in. 11:27:26 11:27:28 11:27:33

Q. So GC bias was one of the errors that you and others, many others, had identified in the sequencing technologies of the time. 11:27:35 11:27:45 11:27:50

And then, you know, that was a laboratory -- using the Agilent probes was a laboratory approach to addressing that particular error; right? 11:27:54 11:27:58 11:28:06

MR. LUMAN: Objection; form. 11:28:06

THE WITNESS: Yes, that would be a method for us to generate data in places that otherwise it would be missing. 11:28:07 11:28:09 11:28:14

Foresight EX1222
Foresight v Personalis
IPR2023-00317

BY MR. HEINRICH: 11:28:14

Q. So in your Slide 5 of the May 8th, 2012, 11:28:14

presentation, again, first column, you had a step of 11:28:22

characterizing errors in sequencing; right? 11:28:28

A. Yes, that's correct. 11:28:31

Q. So if you turn to Slide 14 of Exhibit 2046, 11:28:32

so 2046.14, these are some additional categories of 11:28:39

errors in sequencing at the time that you 11:28:49

characterized; right? 11:28:54

A. I wouldn't phrase it quite that way. These 11:28:55

were methods to identify the errors. These weren't 11:29:01

mechanisms that caused the errors. 11:29:06

Q. Fair enough. Fair enough. 11:29:09

So in categorizing errors, these were some of 11:29:10

the experimental processes you undertook to identify 11:29:16

errors; correct? 11:29:20

A. Yes. These were experimental approaches to 11:29:22

identify which variants were real and which variants 11:29:26

were errors. 11:29:31

Q. So one method you used to try to identify -- 11:29:36

ultimately address errors was to sequence the same 11:29:50

person twice and see if you get discordant results; 11:29:58

right? 11:30:02

A. Yes, because the results should be the same. 11:30:03

And if there are differences, one of them has to be 11:30:05

Foresight EX1222
Foresight v Personalis
IPR2023-00317

wrong. At least one of them has to be wrong. And so that would be a method of identifying certain categories of errors. It wouldn't identify all categories of errors, but it would -- there are certain errors that would show up that way. 11:30:10 11:30:13 11:30:17 11:30:20 11:30:22

Q. Because with respect to the work you were doing in 2012, if you -- let me start over. 11:30:28 11:30:31

You're referring to repeatability; right? 11:30:38

A. Yes, that's right. If you sequenced the same sample twice and you found different results, then it would seem that one of those results, at least, would need to be wrong. 11:30:41 11:30:46 11:30:50 11:30:55

Q. And that's what you refer to here when you say repeatability, same person twice or more, trying to keep everything else constant; right? 11:30:56 11:30:59 11:31:02

A. Yes, that's correct. 11:31:04

Q. So if you're sequencing the same person twice and you're getting different results, then that told you in 2012, "Oh, there must be a problem with sequencing, and let's see how we can address that as part of our accuracy in sequencing program"; right? 11:31:05 11:31:09 11:31:12 11:31:15 11:31:19

A. Yes, that was one of the methods we used to identify errors, and then to identify the underlying mechanism was a separate step. 11:31:22 11:31:26 11:31:31

Q. Then the next bold, you have "controlled 11:31:36

Foresight EX1222
Foresight v Personalis
IPR2023-00317

process experiments." 11:31:41

Same person sequenced multiple times. Each 11:31:42

time varying just one parameter of the process. 11:31:46

What are you referring to there? 11:31:50

A. So DNA sequencing technology has many 11:31:51

chemical and also computational choices that are made. 11:32:01

Very simply, you could run a certain chemical 11:32:08

reaction at one temperature, or you could run it at a 11:32:12

different temperature. 11:32:16

And so you might want to say, "I'm going to 11:32:18

sequence the same person, but at Step 5, 11:32:20

hypothetically, maybe we'll try that at a couple 11:32:24

different temperatures and see if changing the 11:32:27

temperature consistently leads to changes in the error 11:32:30

rates. 11:32:34

And so, for example, in GC bias, regions of 11:32:34

the genome that have high GC content typically require 11:32:39

higher temperatures for the -- some of the elements of 11:32:46

the sequencing reaction compared to regions that have 11:32:49

lower GC content. 11:32:54

Q. So the -- the way you would do controlled 11:32:56

process experiments would be to just change one very 11:32:59

specific part of the process each time; right? 11:33:01

A. Yes, that would help to understand the 11:33:04

underlying mechanisms. 11:33:06

Foresight EX1222
Foresight v Personalis
IPR2023-00317

And some of the data that we were downloading from the Broad Institute was exactly that kind of thing. They had sequenced a very standard sample multiple times with different parameters, and so we were learning also from what they had done. 11:33:08 11:33:12 11:33:17 11:33:21 11:33:25

Q. So if you vary too much from one run to the next, you wouldn't know which of the changes that you made actually led to the discordant result; correct? 11:33:27 11:33:33 11:33:35

A. Yes. And as was mentioned above under "Repeatability," you can have cases where you change absolutely nothing, and you still get discordant results. 11:33:39 11:33:42 11:33:46 11:33:51

Q. Which would tell you that there was an issue with the sequencing, and if you wanted to make -- you would address that to make the sequencing more reliable so it could be repeatable? 11:33:58 11:34:01 11:34:04 11:34:07

A. Yes. And the problems could be either in the sequencing, or they could be in the content like the reference sequence, or they could be in the bioinformatic algorithms that were used, and we found mechanisms of error in all those categories. 11:34:10 11:34:12 11:34:15 11:34:17 11:34:24

Q. So what was your first product from the accuracy program? 11:35:07 11:35:13

A. The first product that Personalis commercialized that leveraged results from the 11:35:15 11:35:20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

accuracy program -- let me make sure I get this correct. I'll describe two products, and you'll understand why I'm describing the two products. 11:35:23 11:35:27 11:35:33

The first product that we actually sold in September of 2012 involved standard whole genome sequencing, but with bioinformatic methods for interpretation that leveraged some of what we had been developing that would lead to better results just because of better algorithms or because of different content. 11:35:37 11:35:42 11:35:46 11:35:51 11:35:55 11:35:58 11:36:01

And we had a customer in the United States government, U.S. Department of Veterans Affairs that had a plan to sequence ultimately a million U.S. veterans, and they were beginning that process. We won a competitive bid, and we received an order for the sequencing and data analysis of 1,370 human genomes. 11:36:01 11:36:04 11:36:08 11:36:13 11:36:15 11:36:19 11:36:26

And at that time our laboratory did not have that much capacity. So we outsourced the sequencing part to Illumina that did have a lab that could do that, and they sent us the data, and we analyzed the data, and provided those analysis results to the VA. 11:36:26 11:36:29 11:36:32 11:36:35 11:36:39

So that was a product that leveraged some of the bioinformatic advances that we had made in the accuracy program. 11:36:45 11:36:47 11:36:49

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Now let me answer the -- we had a second product that also leveraged the assay methods, and we called it our ACE exome. A-C-E. This stood for "Accuracy and Content Enhanced." This was an augmented exome. 11:36:50 11:36:52 11:36:59 11:37:01 11:37:06

We introduced that product at the AGBT conference in February of 2013. "AGBT" stands for "Advances in Genome Biology and Technology." 11:37:10 11:37:13 11:37:20

And the ACE exome used a standard exome that we could purchase from Agilent and also included a -- an Agilent SureSelect capture panel to supplement areas that were outside of the coding regions of the genes and also regions of high GC content, which, as we've discussed, often weren't well represented because of the bias in the sequencing process. 11:37:24 11:37:33 11:37:38 11:37:44 11:37:47 11:37:53 11:37:56

And so because of that, that product was able to fill in some of the gaps that would normally be in the sequencing, even in the coding regions of the genes, and it also included biologically or medically important content that was known, but that was outside of the coding regions of the -- of the genes, and so a typical exome would not include content outside the coding regions of the genes that we felt you could supplement the exome by capturing that as well. 11:37:58 11:38:02 11:38:05 11:38:10 11:38:16 11:38:19 11:38:23 11:38:27 11:38:31

So that was -- that was a product which had 11:38:35

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

both the laboratory methods and the bioinformatic methods and the content methods that were described on the Slide 5 we were referring to. 11:38:36 11:38:41 11:38:44

Q. And when you say, "Augmented exome or whole genome plus," what you're referring to is a more accurate exome sequence or more accurate whole genome sequence; correct? 11:38:46 11:38:52 11:39:00 11:39:06

MR. LUMAN: Objection; form. 11:39:07

THE WITNESS: I would say it was a more complete dataset. It, actually, went beyond what you would call an exome because an exome typically refers only to the coding regions of the genes. So that was something you -- wouldn't normally be on an exome, but we used that term. 11:39:08 11:39:10 11:39:16 11:39:27 11:39:27 11:39:27

And so the exome was being augmented with additional parts of the genome that were not normally included in an exome, and we used that for sequencing a wide variety of sample types, including both cancer samples and noncancer samples. 11:39:39 11:39:43 11:39:45 11:39:49 11:39:52

BY MR. HEINRICH: 11:39:59

Q. And the deliverable that you provided was a sequence of a sample -- provided a snapshot of time; right? 11:39:59 11:40:02 11:40:06

A. The -- what we would provide was a combination of the raw sequence data from that sample 11:40:06 11:40:10

Foresight EX1222
Foresight v Personalis
IPR2023-00317

and the -- and we would provide analysis of that where we would identify variants. We would provide quality information on the variants. How confident we were of each variant. We would provide quite extensive characterization of each variant, whether that variant was known to have medical meaning or known to have biological function. 11:40:13 11:40:20 11:40:28 11:40:32 11:40:35 11:40:36 11:40:39

And if we -- generally, customers would provide us with multiple samples, and we would provide data for each sample. 11:40:41 11:40:44 11:40:48

So if a customer provided us samples from, let's say, 20 people, we would return those 20 datasets. 11:40:50 11:40:54 11:40:57

If a customer provided us with a -- with 20 samples from the same person spread out over time, then we would provide them 20 datasets spread out over time. 11:40:58 11:41:02 11:41:05 11:41:09

But in general the deliverables we had were, one, both raw data and analysis and interpretation for each sample that the customer provided to us. We didn't limit where those samples came from or how many time points there were. 11:41:09 11:41:13 11:41:18 11:41:21 11:41:25

Q. Did a customer ever provide 20 samples taken at 20 different time points? 11:41:26 11:41:30

A. We certainly had customers who provided 11:41:32

Foresight EX1222
Foresight v Personalis
IPR2023-00317

multiple samples taken at multiple time points, including specifically cancer samples like that. 11:41:38 11:41:41

But I don't recall when we had somebody who did 20. I don't think the exact number matters, but there were certainly people who looked at, for example, four different time points, or that kind of thing. 11:41:46 11:41:51 11:41:54 11:41:57 11:42:00

Q. And when -- when did -- did that happen? 11:42:00

A. I don't recall the specific time, but this capability was something -- there was nothing built into the product that limited the number of time points or where the samples came from, and so it wasn't unusual, for example, to -- a simple thing, where you might have different samples from different time points, would be in a cancer patient. You would typically want to sequence both the tumor and the person's, what's called their "normal," which is their background genome from their blood sample, and those are usually from different times. 11:42:01 11:42:06 11:42:11 11:42:13 11:42:17 11:42:23 11:42:26 11:42:29 11:42:32 11:42:38 11:42:39

Q. Is there any disclosure doing that in the exhibits you submitted with your declaration? 11:42:40 11:42:43

A. I think we've -- for example, on Slide 3 of my presentation from May of 2012, you see that we were focused on it and considered it quite seminal the ability to look at multiple time points, and so that's 11:42:48 11:42:50 11:42:56 11:43:00

Foresight EX1222
Foresight v Personalis
IPR2023-00317

an example of that. 11:43:04

I don't remember every single -- what we have 11:43:06
in every single exhibit in terms of that dimension. 11:43:08

But we certainly were -- there was nothing in 11:43:13
our product that would prohibit that, and it certainly 11:43:16
would make sense to be able to do that kind of thing. 11:43:21

Q. And just to be clear, the reference in Slide 11:43:24
3 of Exhibit 2112, you're referring to -- refers to 11:43:27
work that a different group did, not Personalis; 11:43:31
right? 11:43:35

A. The reference in Slide 3 was work that was 11:43:35
done at -- in Mike Snyder's group. Mike Snyder was 11:43:39
one of the cofounders of Personalis, and some of the 11:43:46
other people on the publication were also involved 11:43:48
with Personalis and became inventors. 11:43:51

But that specific project described in that 11:43:54
paper was done at -- by those people at Stanford was 11:43:58
not -- it was not a Personalis-initiated project. 11:44:01

Q. Let's turn to Exhibit 2084. 11:44:09

(Exhibit 2084 was marked for identification.) 11:44:38

MR. LUMAN: Alan, we're about 17 minutes from 11:44:38
noonish. Would that be about a good time for our 11:44:41
lunch break? 11:44:45

MR. HEINRICH: Sure. 11:44:46

THE WITNESS: That's fine for me. 11:44:47

Foresight EX1222
Foresight v Personalis
IPR2023-00317

So Exhibit 2084, just to make sure we're aligned here, is an e-mail that I sent to Carol Tillis on September 4, 2012, and the subject is "Personalis Board Meeting Tomorrow." 11:44:47 11:44:51 11:44:56 11:45:02

BY MR. HEINRICH: 11:45:04

Q. Correct. And in the portion of this thread where you're e-mailing Jonathan, Roman, and Chris, you -- identifies your biggest news that your R and D team completed your prototype product; right? 11:45:04 11:45:19 11:45:27 11:45:34

A. I believe that's what it says at the top of the second paragraph. 11:45:39 11:45:43

Q. Correct. And that prototype product that was what you came to call your Exome Plus product? 11:45:44 11:45:50

A. I think that at the time the prototype we had actually went beyond what ended up being the Exome Plus product. 11:45:54 11:45:58 11:46:03

When we designed the first prototype, it also included what we called a long read pull out, which was specifically to separately pull out portions of the genome where having a longer sequence read would be beneficial, and we had identified quite a few of those locations, and we pulled those out. 11:46:04 11:46:07 11:46:10 11:46:14 11:46:18 11:46:21

That capability to have a separate read length was something that we ultimately did not include in the product that was commercialized, but I 11:46:25 11:46:29 11:46:32

Foresight EX1222
Foresight v Personalis
IPR2023-00317

believe we did include it in the initial prototype. 11:46:37

Q. And the way you describe the prototype here 11:46:43

is -- in the third sentence of that paragraph: 11:46:45

"We will sequence exomes from 130 11:46:48

clinical samples and analyze them using 11:46:51

our state of the art case-controlled 11:46:55

software"; correct? 11:46:59

A. It's been a while. I would like to read 11:46:59

this. It might take a minute. 11:47:02

Q. Mm-hmm. 11:47:03

A. Now that I read this and think about it more 11:48:06

carefully, this particular -- what was described in 11:48:11

this paragraph was a project we had with a customer at 11:48:13

a research group at Stanford University that was 11:48:22

working on a rare neurological disease that was called 11:48:25

"Moyamoya" disease. M-o-y-a-m-o-y-a. 11:48:30

It was a disease where, because of mutations 11:48:33

in the person's genome, their brain nerves don't get 11:48:38

wired the right way, and it leads to mental problems 11:48:44

for the patients, and they had specimens from 130 11:48:48

patients, and they asked us to sequence them and to 11:48:55

analyze that to try to identify what variants might 11:49:01

actually be causing the disease in those patients. 11:49:06

And so the sequencing that was performed for 11:49:09

that project was not our Exome Plus. The sequencing 11:49:13

Foresight EX1222
Foresight v Personalis
IPR2023-00317

that was performed for that project was a standard off-the-shelf exome because we had not yet released our Exome Plus or ACE exome product. That wasn't released until February of 2013. The work that was done here was done using a standard commercial exome kit. We did the sequencing in house in our laboratory. 11:49:19 11:49:22 11:49:27 11:49:30 11:49:34 11:49:40 11:49:44

The elements that would have been labeled as our prototype product would have been in what we called our "disease variant discovery service" that's described in some of Rich Chen's slides, and it was a bioinformatic method to compare the data from healthy people versus people who have a specific disease to see if you can identify what's genetically different that caused those people to have that disease. 11:49:44 11:49:47 11:49:51 11:49:55 11:49:58 11:50:04 11:50:07 11:50:12

And in that project, we were ultimately successful at identifying both a variant that was already known by the investigators, and we also identified some new variants, and there were -- sometime later, there were publications about these results for this rare neurological disease. 11:50:14 11:50:17 11:50:21 11:50:25 11:50:29 11:50:32

It was a disease, as I recall, that primarily affected people of Japanese ancestry. I don't know why, but -- so this was -- this was not our Exome Plus product, but it did leverage some of our bioinformatic 11:50:36 11:50:40 11:50:46 11:50:50

Foresight EX1222
Foresight v Personalis
IPR2023-00317

developments. 11:50:56

Q. Turn, if you will, to Exhibit 2099. I want 11:50:57

to ask you about Slide 3. 11:51:03

(Exhibit 2099 was marked for identification.) 11:51:03

THE WITNESS: To make sure I'm in the right 11:51:23

place, this is an e-mail that I sent to Carol Tillis 11:51:25

copied to some others. In the subject line, it says, 11:51:29

"Board slides from John West, ready to print." And 11:51:34

this was from November 1, 2012. 11:51:37

Q. Correct. 11:51:41

A. And you wanted me to turn to which slide, 11:51:42

please? 11:51:45

Q. Slide 3, please. 11:51:46

A. This is the slide titled, "Key Intellectual 11:51:54

Property and IP Potential Behind the Company." 11:51:58

Q. Correct. And on the left-hand side, you list 11:52:06

some IP license from Stanford; correct? 11:52:11

A. Yes, that's correct. It's not -- there were 11:52:14

other types of IP that we also licensed from Stanford, 11:52:16

but this is some of what we licensed. 11:52:21

Q. And that's not the IP at issue in this 11:52:24

proceeding; correct? 11:52:27

A. Actually, as I look at this, I believe that 11:52:28

this whole left-hand column includes elements that 11:52:32

were licensed from Stanford so that -- for example, we 11:52:36

Foresight EX1222
Foresight v Personalis
IPR2023-00317

licensed at least four different databases, PharmGKB, Veramed, Mendel DB, and Regulon. So -- and those were licenses. 11:52:40 11:52:45 11:52:50

We also had a license in August of 2011 that included 17 different what Stanford called "dockets." Each docket was a separate piece of intellectual property, and we had licensed all of those. 11:52:50 11:52:53 11:52:58 11:53:02

So they also had patent applications that were related to some key accuracy IP. And in particular, they had a patent application related to the idea of ethnically specific human reference sequences. I think that's what was being referred to there and then copyrights and trademarks that were associated with that. 11:53:05 11:53:08 11:53:17 11:53:19 11:53:22 11:53:24 11:53:28

And then this other description here of IP potential from the founders and team. So this was describing some of the areas of expertise of the founders. This does not describe the IP that we were developing inside the company. It shows more, kind of, the background expertise. 11:53:29 11:53:32 11:53:36 11:53:39 11:53:43 11:53:47

Q. What IP is -- so -- so on the right-hand column, there is a bullet, "IP Potential from Founders and Team"; correct? 11:53:49 11:53:56 11:54:01

A. Yes. 11:54:02

Q. And the very last bullet is "Sequencing 11:54:03

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Accuracy"; correct? 11:54:12

A. Yes. 11:54:14

Q. And that is where the IP potential from the team is referred to; correct? 11:54:14 11:54:21

A. Well, no, all of these people were on our team, but I would say that the -- of the four Stanford professors who were involved with us, three of them had more medical or bioinformatic backgrounds. 11:54:22 11:54:26 11:54:33 11:54:38

Mike Snyder, who is also quite knowledgeable about assays and issues of sequencing accuracy, so he had quite a bit of expertise on that, and we, certainly, worked with him on those items. 11:54:43 11:54:46 11:54:49 11:54:52

The sequencing accuracy, because I had worked in the sequencing field for 30 years, I knew a lot about the issues of sequencing accuracy. That's why I was highlighted there. But this is not our whole team. This is just the founding -- the -- the founders. 11:54:55 11:54:57 11:55:02 11:55:04 11:55:08 11:55:09

Q. Now, the founders -- Altman, Butte, Ashley, and Snyder -- they all had assignment obligations to Stanford; correct? 11:55:09 11:55:18 11:55:23

A. All of them were professors at Stanford at that time. All of them assigned their IP to Stanford, and we had licensed some of it from Stanford in August of 2011. 11:55:24 11:55:28 11:55:32 11:55:35

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. Right. And some of that IP is also reflected in the left-hand column under "License from Stanford"; correct? 11:55:37 11:55:43 11:55:47

A. Yes. I think part of what we were trying to show here was it doesn't just talk about IP. It talks about IP potential. And so part of what we were conveying was we have quite a brain trust here. This is some of the world's leaders in this field. 11:55:47 11:55:50 11:55:55 11:55:58 11:56:01

And so the ability for us to bounce ideas off of them or to understand what others are doing in the field is supplemented by having people like experts like that that we can work with. 11:56:06 11:56:08 11:56:11 11:56:15

Q. The sequencing accuracy reference here is a reference to the IP, specifically the patent applications, that you were contemplating filing for the accuracy program; correct? 11:56:17 11:56:25 11:56:32 11:56:37

A. Let's see. The word "potential" is there. So certainly at the time of this slide we had not yet filed any -- a patent application. We did file about two months after this, maybe 2 to 3 months after this. 11:56:39 11:56:43 11:56:47 11:56:50

So we were clearly thinking about that and beginning to plan that, and that would have been the IP that came out of the -- what we call the "Accuracy Program," and that was developed entirely internally to Personalis. 11:56:54 11:56:57 11:56:59 11:57:04 11:57:07

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. Right. And -- and those applications, through some continuations ultimately issued as '394 and the '033; correct? 11:57:09 11:57:15 11:57:23

A. Yes, that's correct. 11:57:23

MR. HEINRICH: Okay. Why don't we take our lunch break now. 11:57:24 11:57:25

THE VIDEOGRAPHER: Okay. We are going off the record. The time is 11:57 a.m. 11:57:27 11:57:28

(Lunch recess taken from 11:57 a.m. to 12:36 p.m.) 12:04:25

THE VIDEOGRAPHER: We're back on the record. The time is 12:36 p.m. 12:35:40 12:36:14

BY MR. HEINRICH: 12:36:17

Q. Welcome back, Mr. West. Did you have any discussions with counsel at our break? 12:36:17 12:36:20

A. Nothing to do with this deposition. We did talk about the FDA approval of that drug and Steve's son going out to Hawaii and all kinds of nice things. Nothing to do with this deposition. 12:36:21 12:36:24 12:36:28 12:36:32

Q. Excellent. Let's see. So I'm going to go back to 2112. 12:36:33 12:36:39

A. Okay. I'll return to that. 12:36:42

Q. And then I'll direct your attention to Slide 13. 12:36:43 12:36:48

A. Okay. Let me go back to -- so 2112 is the CEO overview from 8th of May? 12:37:25 12:37:30

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. Yep. 12:37:33

A. And I'm looking at Slide 13. 12:37:38

Q. Okay. So the third main bullet is titled "Personalis Lab." 12:37:40 12:37:46

A. Yes. 12:37:49

Q. What's referred to there? 12:37:49

A. I'm sorry? 12:37:51

Q. What's being referred to there? 12:37:54

A. Let me just look and see. 12:37:56

So Personalis, at the time of this, did not have a laboratory. We were in the process of planning for a laboratory. I think we had just signed a lease on a property that had a -- there was a room that had previously been the lunch room for the company that was there before, and we were looking at -- at the possibility of turning that into a small laboratory. 12:38:06 12:38:10 12:38:13 12:38:17 12:38:23 12:38:26 12:38:28

And so we would have been talking about plans for what our laboratory would do. We did not have a laboratory at that -- we might have done a few things with borrowed space or something at that time, but we did not have a fully operating laboratory at that point. 12:38:31 12:38:33 12:38:38 12:38:42 12:38:44 12:38:47

Q. But you were contemplating having one; right? 12:38:47

A. Yes. 12:38:50

Q. And you had in mind what would be the 12:38:50

Foresight EX1222
Foresight v Personalis
IPR2023-00317

internal processes for the Personalis lab; right? 12:38:54

A. Yes, and some of them are listed here. 12:38:59

Q. What's the first step listed here under "Personalis Lab"? 12:39:05 12:39:09

MR. LUMAN: Mischaracterizes the document. 12:39:11

THE WITNESS: Let's see, the first bullet point underneath where it says, "Personalis Lab," says, "Received, de-identify samples." 12:39:14 12:39:15 12:39:18

BY MR. HEINRICH: 12:39:18

Q. Just to address the objection that I was mischaracterizing the document, when I said first step, would there be a step prior to receiving the sample? You can't do anything with a sample until you receive it; right? 12:39:27 12:39:29 12:39:34 12:39:37 12:39:40

A. There are steps before you receive a sample. Typically, you have to send certain kits to the customer so that they have the right things in which to send the sample to you that may involve certain containers for sealing the sample or preservatives or things like that. 12:39:46 12:39:49 12:39:53 12:39:58 12:40:02 12:40:05

So you obviously, you don't -- there's nothing you can physically do with the sample until you have it, but the -- but you would typically receive -- you'd coordinate with the customer. There might be a shipping list to say a list of the samples 12:40:07 12:40:07 12:40:10 12:40:12 12:40:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

that are coming, what their characteristics are, 12:40:19
coordinate what the plans -- so there would be 12:40:22
planning and so forth before receiving the sample. 12:40:24
Q. In terms of what's happening in the lab, 12:40:26
first the lab has to receive the sample; right? 12:40:28
A. Generally, the lab has to receive a sample 12:40:30
before they can process it, yes. 12:40:33
Q. Right. So that bullet is "Receive, 12:40:35
De-identify Samples." 12:40:40
What does that refer to, "de-identify 12:40:41
samples"? 12:40:43
A. So the -- the issues of genetic ethics, which 12:40:44
have to do with the fact that the information derived 12:40:52
from a sample may be of medical consequence to the 12:40:55
person if it's a clinical sample. 12:40:58
And so you often want to be careful about who 12:41:02
can actually have access to knowing, for example, who 12:41:08
the patient is. 12:41:12
So an example of de-identifying a sample 12:41:13
would be, if the sample came in and it was a group of 12:41:17
them and said, "This is from John West, and this one 12:41:21
is from somebody else," it had people's names on it, 12:41:24
you would -- you would separate that off, put a -- 12:41:29
maybe put a number on the sample, like a random 12:41:30
number, so Sample 7204, so the person in the lab 12:41:33

Foresight EX1222
Foresight v Personalis
IPR2023-00317

processing it couldn't accidentally say, "Oh, that's -- John West has such and such a result." They just say, "Oh, Sample 7204 has a certain result." 12:41:38 12:41:43 12:41:47

And so you are separating the identification of who the person was from the sample. You can still refer to the sample and keep track of it, but you wouldn't be -- but the people handling it in the lab or handling the data wouldn't have to know the identity of the person. 12:41:53 12:41:54 12:41:57 12:41:59 12:42:01 12:42:04

Q. And you would be keeping track of the sample by the number? 12:42:06 12:42:09

A. Yes, that's right. 12:42:09

Q. So let's turn to paragraph 162 of your declaration. 12:42:12 12:42:18

A. Do you know what page that's on? 12:42:40

Q. 101. 12:42:42

A. Okay. I'm looking at paragraph 162. 12:42:51

Q. Okay. So you said that, "I attended the July 2011 meeting with the following additional persons, all of whom are appropriately not named as inventors of the '033 patent." 12:42:55 12:43:03 12:43:07 12:43:12

And the first name you mentioned here was Michael Snyder; correct? 12:43:15 12:43:18

A. Yes. 12:43:20

Q. So you testified repeatedly in our morning 12:43:20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

session about the importance of Dr. Snyder's paper from March of 2012. It's referenced in Slide 3 of your May 8, 2012, board presentation; correct? 12:43:31 12:43:43 12:43:46

A. Yes. 12:43:50

Q. So why was Dr. Snyder appropriately not named as an inventor given the importance that you ascribe to his work? 12:43:51 12:44:00 12:44:05

MR. LUMAN: Objection; calls for a legal conclusion. 12:44:07 12:44:10

THE WITNESS: So I would say that the work that Mike Snyder had done did not contribute to the elements of the patent. It did not contribute to the -- or conception of it. 12:44:10 12:44:13 12:44:19 12:44:23

Mike was knowledgeable about many things, and you can be -- if you see something from somebody else, it can spark an idea that you have. It doesn't mean that who came up with that something else came up with the idea. And I would say that's, kind of, the case here. 12:44:26 12:44:29 12:44:38 12:44:41 12:44:43 12:44:46

So Mike had done some things. He didn't do what we described in the patent, and so he's not an inventor on that, but some of the things he did, when we thought about it with the context of other things we were thinking about, which he had not participated in, we were able to see that we could take something 12:44:48 12:44:51 12:44:58 12:45:02 12:45:05 12:45:08

Foresight EX1222
Foresight v Personalis
IPR2023-00317

further that was not what he described. 12:45:12

BY MR. HEINRICH: 12:45:14

Q. Isn't it the case that you didn't want to 12:45:15

name him as an inventor because, then, Stanford would 12:45:17

co-own your -- your patent applications? 12:45:21

MR. LUMAN: Objection; foundation, 12:45:26

argumentative. 12:45:27

THE WITNESS: No. 12:45:30

BY MR. HEINRICH: 12:45:30

Q. So is it your testimony that Personalis did a 12:45:31

careful inventorship analysis and named the correct 12:45:36

inventors and appropriately excluded Dr. Snyder as an 12:45:43

inventor? 12:45:50

A. I would say that when we submitted the patent 12:45:51

application we included the people that we felt 12:45:54

contributed to that invention, and we didn't think 12:45:58

that Mike had contributed to that invention. 12:46:01

It didn't mean that Mike hadn't contributed 12:46:05

to the company. He contributed actually in many ways 12:46:07

to the company, but we didn't feel he contributed to 12:46:09

that invention. 12:46:12

Q. Now, you testified earlier that you -- you, 12:46:13

sort of, focussed your review of the patents, the '394 12:46:20

and '033 patents, on the claims, correct, in preparing 12:46:26

your declaration? 12:46:30

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. Yes. I spent more time on the claims than on other parts. I've, certainly, seen the rest at various times in the past. 12:46:32 12:46:35 12:46:38

Q. So do you have the claims of the patent handy? 12:46:40 12:46:45

A. I don't. But actually, is it -- is the patent one of the exhibits? I don't remember. 12:46:46 12:46:48

Q. It's one of the exhibits in the IPR proceedings. I have copies of the patents. 12:46:51 12:46:56

A. If I recall, we didn't make it an exhibit here because it was already something everybody knew. 12:47:04 12:47:06

MR. HEINRICH: These are for you (indicating). 12:47:21 12:47:22

BY MR. HEINRICH: 12:47:22

Q. Why don't we start with the '394? 12:47:23

A. One second. Can I close this for the time being -- 12:47:26 12:47:29

Q. You certainly can. 12:47:29

A. -- and move it out of the way here. So I'm looking at the '394 patent. 12:47:30 12:47:42

Q. If you go to Claim 1. 12:47:47

A. Yes. I'm looking at the beginning of Claim 1. 12:48:10 12:48:13

Q. And your declaration has an element-by-element discussion -- I should say a 12:48:13 12:48:16

Foresight EX1222
Foresight v Personalis
IPR2023-00317

step-by-step discussion of Claim 1 and your purported conception of it; correct? 12:48:19 12:48:26

A. As I recall, when we wrote the declaration, we went claim by claim and talked about the background of it. And where there -- certain of the claims are relatively simple, and some of the claims have many elements, and Claim 1 is -- has more elements. 12:48:28 12:48:34 12:48:39 12:48:42 12:48:46

And so I think we had broke that into several parts when we described it. 12:48:49 12:48:52

Q. Claim 1 includes a series of steps? 12:48:53

A. Yes, it does. 12:48:57

Q. And even though you went through it in detail in your declaration, feel free to review it again now if you would like. I have a few questions about it. 12:48:59 12:49:06 12:49:10

A. Okay. And I'm happy to review it, but if you can tell me what you think the questions are, then I'll know when I'm reviewing -- 12:49:13 12:49:18 12:49:19

Q. Why don't you just -- 12:49:21

A. Scan that claim? 12:49:23

Q. Yes. 12:49:27

A. Okay. I've read the first claim. 12:51:27

[redacted]

Foresight EX1222
Foresight v Personalis
IPR2023-00317

MR. LUMAN: I'll object to that question to the extent it's calling for a legal conclusion and outside the scope of his declaration. 12:52:25 12:52:29 12:52:31

BY MR. HEINRICH: 12:52:33

Foresight EX1222
Foresight v Personalis
IPR2023-00317

BY MR. HEINRICH: 12:53:16

Q. Okay. So what about the whole Exome Plus or ACE Exome Plus product that you did commercialize? 12:53:16 12:53:25

Are there any steps recited in Claim 1 that were not included in the work flow for the commercialized whole exome product? 12:53:30 12:53:32 12:53:35

MR. LUMAN: Same objections. 12:53:38

THE WITNESS: So the ACE exome product that we released, which was, essentially, the commercial version, the first commercial version of exome would have been originally the Exome Plus, was generally based on a single initial sample and analysis of that sample. 12:53:39 12:53:45 12:53:49 12:53:52 12:53:58 12:54:02

It could be used, and we did use our augmented exome at multiple time points on some -- in some cases of some patients, and we did use it in a number of cases because it's a real product. So we actually had experience with that. 12:54:04 12:54:09 12:54:15 12:54:17 12:54:21

And so we did use it in some cases, for example, to look at both a tumor and separately the blood of the patient. So you could do -- look at what was called "tumor" versus "normal" and end up identifying a somatic variance in the sample. 12:54:22 12:54:27 12:54:30 12:54:32 12:54:35

So those were places where there could be multiple samples, and they could do multiple time 12:54:40 12:54:44

Foresight EX1222
Foresight v Personalis
IPR2023-00317

points, but you could also use the ACE exome just on a single germ line, you know, a blood sample of an individual, particularly in the cases that had to do with Mendelian disease where you didn't need to separate out somatic variance. 12:54:48 12:54:53 12:54:57 12:54:59 12:55:05

BY MR. HEINRICH: 12:55:08

Q. Had you provided in any of your exhibits evidence of when you first or when Personalis first did a match tumor normal analysis? 12:55:08 12:55:13 12:55:17

MR. LUMAN: Outside the scope. 12:55:22

THE WITNESS: So Personalis' team had been involved in tumor normal work, certainly some of them before joining Personalis. So it was something that they were experienced with both from a laboratory standpoint and from a bioinformatic standpoint. 12:55:24 12:55:32 12:55:40 12:55:44 12:55:47

So I don't know if that answers your question, but -- maybe otherwise -- if you could ask the question again, maybe I can. 12:55:57 12:55:59 12:56:00

BY MR. HEINRICH: 12:56:02

Q. Yeah, no, it didn't. 12:56:02

A. Okay. 12:56:02

Q. So I'm wondering if there is a documentary evidence that was submitted in this proceeding to help us understand with proof when Personalis may have first done a match tumor normal analysis as part of 12:56:03 12:56:06 12:56:08 12:56:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

its whole exome product? 12:56:20

MR. LUMAN: Outside the scope, asked and 12:56:23

answered. 12:56:25

THE WITNESS: I don't recall if there's ever 12:56:25

been any request to document that. So I don't think 12:56:28

we documented that in the declaration. I don't think 12:56:30

it was considered relevant. 12:56:35

BY MR. HEINRICH: 12:56:37

Q. Okay. Was the whole exome product as 12:56:37

marketed at launch, did it follow the steps of Claim 1 12:56:45

of the '394 patent? 12:56:54

MR. LUMAN: Calls for a legal conclusion, 12:56:56

outside the scope. 12:56:58

THE WITNESS: We have derived several 12:56:59

different patents from the original patent filing, and 12:57:05

the exome -- the ACE exome certainly followed the 12:57:09

steps that are in some of those other patents. 12:57:17

In particular, separately pulling out regions 12:57:20

of high GC content and using that to fill in the gaps 12:57:25

and the sequencing, that was one of the areas that was 12:57:29

covered in -- in one of the other patents. 12:57:32

In terms of all of the steps of this Claim 1, 12:57:39

the product could have been used as the front end for 12:57:42

that. Again, the Exome Plus was not a personalized 12:57:46

product the way we implemented it commercially. It 12:57:52

Foresight EX1222
Foresight v Personalis
IPR2023-00317

was the same hybrid capture set for each sample. 12:57:57

So the genetic variants that were covered by 12:58:03

the ACE exome were not different from one person to 12:58:09

another. And so the idea of identifying variants from 12:58:15

a first sample and then using that to design a second 12:58:18

capture set, that was not part of what we commercially 12:58:23

implemented in the ACE exome. 12:58:26

BY MR. HEINRICH: 12:58:36

Q. As marketed at launch, the ACE exome 12:58:37

similarly focused on analysis of a single sample; 12:58:43

correct? 12:58:48

A. It could be used for analysis of multiple 12:58:48

samples, and I believe it was used with some customers 12:58:49

for analysis of both tumor and normal samples and also 12:58:50

in some cases for samples from tumors and biopsies at 12:58:54

multiple time points. 12:59:05

I would say that -- when I'm saying that, 12:59:07

the -- the first product that we released in February 12:59:10

of 2013, we referred to as the "ACE Exome," but I 12:59:17

think it was called "Version 1." 12:59:17

Over the years, we had new versions of that 12:59:23

product. They became better and better 12:59:26

implementations of that product and added new 12:59:29

capabilities that were covered in other IP. 12:59:32

But when I say we worked with tumor versus 12:59:35

Foresight EX1222
Foresight v Personalis
IPR2023-00317

normal samples, multiple samples that way or multiple time points, it would have been from either the original product or the Version 2, Version 3, Version 4 of the product over the years. 12:59:39 12:59:43 12:59:46 12:59:51

Q. Was it marketed at launch as a product that involved the analysis of multiple samples from single individuals? 12:59:53 12:59:56 01:00:01

A. It was certainly marketed as a -- something where you would analyze multiple samples that were genetically related. 01:00:04 01:00:09 01:00:13

So, for example, it is common in genetic medicine, where you have typically a child that's afflicted with seizures or some terrible disease, to then also sequence the parents because you're trying to understand where the variants, genetic variants came in from which parent and so forth. 01:00:16 01:00:20 01:00:25 01:00:29 01:00:31 01:00:34

And so that would be what's called a "family trio," and those would be three related samples, and so we certainly would have described that kind of thing. 01:00:37 01:00:39 01:00:42 01:00:45

I don't remember specifically the brochures we had and the presentations that we made. They were pretty extensive presentations. 01:00:45 01:00:49 01:00:53

So we might have gone through a lot of different applications of the product, but I don't 01:00:56 01:00:58

Foresight EX1222
Foresight v Personalis
IPR2023-00317

recall whether the commercial material -- what it included. We hadn't been asked to review that or present that. So it's not -- I haven't been over it recently. 01:01:03 01:01:04 01:01:08 01:01:10

Q. Okay. So you don't know the answer? 01:01:10

A. I'm sorry? 01:01:12

Q. But you don't know the answer? 01:01:13

A. I don't -- I don't -- I can't answer that question because I haven't reviewed the relevant material recently. 01:01:15 01:01:18 01:01:22

Q. That would have been shorter, but you know, it's where we're at. 01:01:22 01:01:25

When did Personalis start working on NeXT Personal? 01:01:27 01:01:33

A. I would say Personalis progressively developed the ideas that went into NeXT Personal over the years. Obviously, many of the ideas are covered in the patents that are in front of us here. 01:01:33 01:01:48 01:01:51 01:01:54

We filed additional patents in August of 2013, also in 2014, also in 2016, I believe. And -- and so all of those were elements that contributed to the base of technologies we could draw on, and so those are the things that, then, led to what became NeXT Personal. 01:01:56 01:01:59 01:02:06 01:02:11 01:02:17 01:02:22

We did not work continuously from 2012 until 01:02:23

Foresight EX1222
Foresight v Personalis
IPR2023-00317

the product was released. We did not have a focused product development effort during that whole time trying to make just NeXT Personal. We had quite a few other products. We had a lot of other priorities in cancer, particularly to do with personal cancer vaccines and what were called "neoantigens." 01:02:29 01:02:33 01:02:36 01:02:41 01:02:41 01:02:44

So those were other cancer areas that we worked on. 01:02:49 01:02:51

And as we built expertise, different aspects of our expertise were things that we, then, drew on for the ultimate development of what became the NeXT Personal product. 01:02:52 01:02:56 01:03:02 01:03:05

Q. When did Personalis begin its focused product development efforts on NeXT Personal? 01:03:05 01:03:09

A. I don't recall exactly. Certainly, it was after the January 2013 initial patent filing here. 01:03:13 01:03:16

Q. Turn please to Exhibit 2098. 01:03:55

(Exhibit 2098 was marked for identification.) 01:03:55

THE WITNESS: Can I set the patents aside for the time being? 01:04:00 01:04:02

BY MR. HEINRICH: 01:04:04

Q. We're done with them. 01:04:04

A. So 2098? 01:04:40

Q. 2098. 01:04:42

A. Just to confirm, this is an e-mail that I 01:04:43

Foresight EX1222
Foresight v Personalis
IPR2023-00317

sent to Rich Chen and Carol Tillis Friday, October 19, 2012.

Q. Yes.

THE REPORTER: What was the date?

MR. HEINRICH: October 19, 2012.

BY MR. HEINRICH:

Q. And you state in your e-mail:

"I think we should consider ASAP applying for a patent on our ideas related to panels reflection to the exome, slash, genome level as well as other directions related to our exome plus and whole genome plus."

Do you see that?

A. Yes, I do see that sentence.

Q. And that -- your idea here about applying for a patent, that's what led to the filing of the provisional application in January of 2013 that ultimately led to the issuance of patents that include the '394 and '033; correct?

MR. LUMAN: Objection; foundation, mischaracterizes his testimony.

THE WITNESS: I -- I don't know that I can say it led one for one to that because we might have been thinking about other ideas that we, then, didn't

Foresight EX1222
Foresight v Personalis
IPR2023-00317

file on. We might have been thinking about those ideas. 01:06:07 01:06:10

But certainly this is a few months beforehand, and in general, we were thinking that it was time to start formalizing our IP in terms of filings. 01:06:10 01:06:12 01:06:16 01:06:21

You can see in the -- one of the last paragraphs here -- it's very short -- it says: 01:06:21 01:06:25

> "I think the trade secret approach would be too restrictive in terms of what we would eventually tell customers." 01:06:27 01:06:29 01:06:32

And so this meant that was -- that was an alternative, possible approach to us for IP, was to handle things as trade secrets. 01:06:35 01:06:36 01:06:40

And people debated the merits of trade secrets versus disclosure in patents, and in this e-mail, I was weighing in, saying, I think, given that we were going to want to describe our product to the customers and we're now -- we were only a few months away from launching what was going to be our first product, I felt it was important not to rely on the trade secret approach and to make filings. 01:06:43 01:06:46 01:06:49 01:06:51 01:06:55 01:06:58 01:07:00 01:07:03

And then prior to our -- the launch of our first product in February of 2013, the first assay product, the month before that in January of 2013, we 01:07:07 01:07:11 01:07:17

Foresight EX1222
Foresight v Personalis
IPR2023-00317

did file our first provisional, and that provisional ultimately led to the two patents being discussed here today. 01:07:22 01:07:25 01:07:29

BY MR. HEINRICH: 01:07:29

Q. Was any work done on drafting that first provisional in January of 2013 you just referenced prior to your e-mail on October 19, 2012? 01:07:29 01:07:36 01:07:40

MR. LUMAN: That calls for privileged information. I'll instruct him not to answer. 01:07:48 01:07:50

MR. HEINRICH: You're -- you're relying on a constructive reduction to practice, and you're going to block me from inquiring on when work started on the patent application that you're relying on for constructive reduction of practice? 01:07:54 01:07:56 01:07:59 01:08:06 01:08:15

MR. LUMAN: I'm just looking at the question. 01:08:16

THE WITNESS: I'm sorry. I didn't really follow what you just said, or if you need a minute. 01:08:21 01:08:23

MR. LUMAN: But you're asking about was any work -- drafting done on the patent application. And work done on drafting a patent application, that's privileged. 01:08:26 01:08:28 01:08:34 01:08:38

MR. HEINRICH: Well, you've put at issue the filing -- work and filing of the provisional application. So I'm entitled to know when that work started. 01:08:38 01:08:43 01:08:46 01:08:49

Foresight EX1222
Foresight v Personalis
IPR2023-00317

MR. LUMAN: The work on the provisional application? 01:08:52 01:08:54

MR. HEINRICH: Yes, yes. 01:08:54

MR. LUMAN: The question you asked is calling for privileged information. Maybe you can do a different question that doesn't call for privileged information. 01:09:01 01:09:03 01:09:06 01:09:11

MR. HEINRICH: I'm not asking for the contents of any attorney-client communication. I'm asking for information on when an act started. The act of drafting. That's not privileged in any conceivable legal sense. 01:09:11 01:09:12 01:09:16 01:09:18 01:09:26

MR. LUMAN: Can you re-ask your question specifically? 01:09:28 01:09:30

BY MR. HEINRICH: 01:09:31

Q. Was any work done in actually drafting the provisional application that you're relying on for your constructive reduction to practice prior to October 19, 2012? 01:09:31 01:09:35 01:09:40 01:09:45

A. I'm sorry. I don't know what "constructive reduction to practice" means. 01:09:48 01:09:53

I think I do know what you mean by did we start drafting the patent. 01:09:54 01:09:57

Q. That's what I'm asking. 01:09:57

A. But I don't know what all the other words you 01:10:00

Foresight EX1222
Foresight v Personalis
IPR2023-00317

just used mean. 01:10:02

Q. Let me ask it again. 01:10:02

A. And if you can do it -- more lay terms would be fine. 01:10:02 01:10:06

Q. Fine. Was there any work done on drafting the January 2013 provisional application prior to your e-mail on October 19, 2012? 01:10:06 01:10:08 01:10:13

A. So I don't know what we have in terms of documentation of that or whether there's any of that in the disclosures here, but let me finish answering. 01:10:26 01:10:29 01:10:31

I know that the -- the process of being prepared to file with the U.S. Patent Office would have started with writing an invention disclosure and having, like, an internal invention disclosure form, and then you would begin building the pieces that would go into writing a patent. 01:10:35 01:10:40 01:10:44 01:10:49 01:10:53 01:10:55

And the -- I recall that earlier than this we had begun the process of having a patent disclosure form at least set up. If I recall correctly, it was Mark Pratt who is one of the coinventors here. 01:10:58 01:11:04 01:11:09 01:11:14

Mark had a lot of IP. He wasn't an attorney by any means, but he had just invented a lot of stuff over the years that was patented, and so I think he -- he was an advocate for beginning to have the process and so forth. 01:11:18 01:11:21 01:11:24 01:11:29 01:11:29

Foresight EX1222
Foresight v Personalis
IPR2023-00317

So probably in the summer of 2012, we would have started some of that kind of thing, and some of the content that would have gone into the provisional application. There are extensive tables, for example, there. 01:11:33 01:11:37 01:11:41 01:11:44 01:11:44

Those tables would have been being prepared, not just for the purposes of drafting a patent, but for the process of designing the product. 01:11:47 01:11:50 01:11:53

And so the -- I'm not sure I can answer exactly when what -- what you would actually call a patent application draft, but certainly materials that then -- you know, people weren't starting from scratch when they sat down to actually write whatever the patent was. 01:11:55 01:12:01 01:12:03 01:12:07 01:12:10 01:12:13

There was a lot of material to draw on, and that material was material that came from the product development, which was going on through most of 2012. 01:12:14 01:12:16 01:12:19

So I would expect that -- you know, if you see these -- patents are 50 or 60 pages, and they have a lot of technical detail and examples and tables and so forth, that would have come from the kind of work that we were doing throughout 2012. 01:12:23 01:12:26 01:12:30 01:12:34 01:12:38

So that's a -- it doesn't really separate out the patent drafting process as a -- like a Word document from the process of coming up with the 01:12:40 01:12:44 01:12:48

Foresight EX1222
Foresight v Personalis
IPR2023-00317

content for it, but I'd say those were kind of -- tended to be the same people working on them both. So I'm not sure we really separated it out. 01:12:51 01:12:55 01:12:59

At some point it became more formalized as the patent application, but the content was being developed all through 2012 as we explored all the different aspects of what we wanted to do in the patent and all of the specifics that are called out. 01:13:02 01:13:05 01:13:09 01:13:13 01:13:16

So I feel like it was -- the development of the first filing happened over the course of 2012. Whether that officially got called a "draft" document for the patent, I don't remember what date that would have been more formalized. 01:13:19 01:13:23 01:13:28 01:13:33 01:13:36

Q. Do you recall receiving a response to your e-mail to the effect of, "Gosh, John, the process of putting together a patent application is already well underway"? 01:13:38 01:13:41 01:13:45 01:13:48

A. I don't recall what responses there were to this e-mail. 01:13:49 01:13:55

Q. Was any of the development work that you referenced performed for the specific intention of including it in a patent application prior to your e-mail here in October of 2012? 01:13:58 01:14:04 01:14:07 01:14:11

A. We, generally, did not do work specifically for the purposes only of including it in a patent 01:14:17 01:14:20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

application. 01:14:23

I would say the company was primarily focused 01:14:23

on developing a product, and then the patent 01:14:26

application was to protect that product, and the -- 01:14:29

and the -- the technological base that underlay it. 01:14:32

But the efforts of the company were almost 01:14:36

entirely focused on developing a product, and then the 01:14:39

patent was -- the patent application was a bit of a 01:14:42

side product from the core focus, which was on the 01:14:44

product only. 01:14:47

Q. Now, this October 19, 2012, e-mail is the 01:14:48

first instance that we've seen in the documentation 01:14:55

that is provided to us in connection with your 01:14:59

declaration of a reference to, "Hey, let's, you know, 01:15:03

write up a patent application." 01:15:07

Are you aware of any earlier decision point 01:15:09

where Personalis decided to pursue a patent 01:15:14

application that ultimately resulted in the 01:15:25

January 2013 provisional one? 01:15:27

MR. LUMAN: That's privileged. I'll instruct 01:15:28

him not to answer that. 01:15:36

MR. HEINRICH: Okay. We'll hold that against 01:15:36

you, constructive reduction to practice. 01:15:40

MR. LUMAN: Constructive reduction to 01:15:40

practice is his -- his filing the patent application. 01:15:40

Foresight EX1222
Foresight v Personalis
IPR2023-00317

MR. HEINRICH: And I'm going to tell you we're going to hold your privilege instruction against you in connection with your arguments on diligence. I just want to make that clear we're going to take that position.

MR. LUMAN: How are you going to do that?

MR. HEINRICH: Well, I'm not going to get into a discussion on that. I just want you to know our position. So I'm -- so I want to give you the opportunity to withdraw your instruction if you'd like. You don't have to. I just want to give you notice.

MR. LUMAN: Yeah, that's asking for privileged information.

MR. HEINRICH: Okay. Excellent.

BY MR. HEINRICH:

Q. Do you know as a matter of fact that there was an invention disclosure form submitted on which the January 2013 provisional was ultimately based?

A. I don't know. I know that the -- like, a blank form was created at some earlier point. Like, if somebody has an invention, they should fill out this form. I don't recall whether anybody actually filled it out for this before that. They may have, but I don't know.

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. I want to turn to page 103 of your declaration. 01:17:05 01:17:08

A. I'm sorry. I'm happy to go wherever. I just didn't quite hear where you want me to go. 01:17:10 01:17:16

Q. Page 103. 01:17:20

A. Page 103 of my declaration, not an exhibit. 01:17:22

Okay. I'm looking at page 103 of the -- my declaration. Somewhere in there it has paragraph 166. 01:17:49 01:17:53

Is that what you're looking at? 01:18:03

Q. So it's directing you to the first line of the page here. It says: 01:18:05 01:18:10

"At least Mark Pratt and I were aware that it was possible to multiplex multiple samples into each lane -- lane of a sequencing instrument flow cell by adding a DNA barcode to the end of each molecule of DNA" -- 01:18:14 01:18:17 01:18:22 01:18:25 01:18:27 01:18:31

A. I'm sorry. I thought we were starting with paragraph 166, but that's not -- 01:18:32 01:18:35

Q. No, I said -- 01:18:36

A. Are you above that? 01:18:38

Q. The first line of the page. 01:18:39

A. First line of the page. Okay. I'm sorry. Okay. I see, yeah, "At least Mark Pratt and I." Sorry. 01:18:40 01:18:42 01:18:47

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. Why don't you just go ahead and read that to yourself so I don't have to repeat it. 01:18:48 01:18:51

A. So I've read that -- everything down to where it says, "166." 01:19:55 01:19:58

Q. So I want to just make sure we have a common understanding of where in the work flow this step would happen. Okay? 01:19:59 01:20:12 01:20:19

So let's take a work flow that -- like yours uses the Agilent biotinylated SureSelect probes. 01:20:20 01:20:27

A. Okay. 01:20:35

Q. So prior to the step we're talking about here at the top of page 103, the DNA of interest would be pulled down from your sample using the Agilent biotinylated probes; correct? 01:20:35 01:20:39 01:20:47 01:20:54

A. No. 01:20:59

Q. The DNA of interest would have to be pulled down from the sample before it's sequenced; right? 01:20:59 01:21:04

A. Yes. 01:21:08

Q. Okay. So you're talking here about -- what you're talking about here at the top of 103 is a step where the DNA has been pulled down and is now about to be sequenced on the instrument; right? 01:21:09 01:21:17 01:21:21 01:21:27

A. No. 01:21:29

Q. You're talking about multiplexing multiple samples into each lane of a sequencing instrument flow 01:21:30 01:21:40

Foresight EX1222
Foresight v Personalis
IPR2023-00317

cell; correct? 01:21:46

A. Yes. 01:21:47

Q. The DNA has already been captured before it goes onto a flow cell; isn't that fair? 01:21:47 01:21:52

A. The DNA is captured before it goes onto the flow cell, yes. 01:21:54 01:21:58

Q. So after the DNA is captured, the Agilent probes are alluded or washed away; correct? 01:21:59 01:22:04

A. So after the DNA has been captured. That's not what this paragraph is talking about. This paragraph is not talking about capture. This paragraph is talking about barcodes. 01:22:09 01:22:17 01:22:20 01:22:24

Q. So we'll come back to the paragraph. Just focus on my questions. Okay? 01:22:27 01:22:34

So after DNA is captured, the capture probes -- in this example the Agilent SureSelect probes -- are washed away, and the DNA that's been captured, sequenced; correct? 01:22:36 01:22:42 01:22:46 01:22:50

A. There are other steps, but yes, those two -- those steps do happen. 01:22:52 01:22:58

Q. First there's capture, and then the capture probes are alluded, and then the DNA is sequenced; correct? 01:22:59 01:23:03 01:23:11

A. I'm not sure you'd quite use the term that the capture probes are alluded because the capture 01:23:12 01:23:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

probes are typically attached to the molecule. 01:23:20

It might be that the correct terminology 01:23:24

might be that the DNA, which has been captured after 01:23:25

it's been separated by being pulled out, that DNA is 01:23:28

alluded off of the beads. 01:23:31

Q. Fair enough. 01:23:33

A. It's a question of which is alluded off of -- 01:23:34

Q. Yeah, yeah, yeah. Okay. 01:23:35

A. -- which. But the word "alluding" -- 01:23:35

Q. Yeah, yeah, yeah. 01:23:35

A. -- usually refers to the thing that ends up 01:23:35

in solution, whereas the beads and the probes might 01:23:38

not be in solution. It's the DNA that we're trying to 01:23:41

capture that ends up in solution and goes on into the 01:23:44

sequencing process. 01:23:49

Q. Thank you. My question was fuzzy. So I 01:23:50

appreciate that. 01:23:52

A. But so far what you said, it doesn't have 01:23:52

anything to do with the paragraph you pointed me to. 01:23:55

Q. So the -- we talked about this earlier. The 01:23:57

probes that you used or the biotinylated Agilent 01:24:04

probes that would pull down the DNA so we would have 01:24:10

the bead with the probe magnetized to it with the 01:24:14

captured DNA; correct? 01:24:23

A. The probe is not magnetized. The bead is 01:24:25

Foresight EX1222
Foresight v Personalis
IPR2023-00317

magnetized. 01:24:29

Q. The probe is attached to the bead, to the biotin streptavidin relationship? 01:24:31 01:24:35

A. It is attached through the -- the probe has the biotin on it. That binds to streptavidin, which is covalently bound to the bead, and the bead has -- in the interior of the bead has paramagnetic material which can then be pulled out. 01:24:35 01:24:38 01:24:43 01:24:47 01:24:53

Q. So at that point, the DNA that's been captured is alluded for subsequent sequencing; correct? 01:24:54 01:24:57 01:25:03

A. Yes. 01:25:04

Q. And as part of that next series of steps that results in sequencing of the captured DNA, barcodes can be ligated to the DNA molecules to be sequenced; correct? 01:25:04 01:25:12 01:25:19 01:25:25

A. No. 01:25:25

Q. That's incorrect? 01:25:26

A. That's incorrect. 01:25:27

Q. So how's that incorrect? 01:25:32

A. The barcodes are generally added to the -- during the library prep process prior to the hybrid capture. 01:25:35 01:25:39 01:25:43

Q. And so the -- what's the point of using the barcodes? 01:25:45 01:25:52

Foresight EX1222
Foresight v Personalis
IPR2023-00317

A. It is to be able to process samples together and have the data at the end be demultiplexed so that even though all the sequence reads end up coming out together from the sequencing instrument, by looking at a portion of a sequence read, which is the portion that has the barcode, you can identify which sample that sequence read came from even though they were all processed together on the same sequencer. 01:25:53 01:25:58 01:26:04 01:26:07 01:26:11 01:26:15 01:26:18 01:26:22

And if you didn't have a barcode, all of the data would be mixed together, and you wouldn't know which came from which sample. 01:26:24 01:26:26 01:26:28

Q. So the barcodes are sequenced along with the DNA catch; correct? 01:26:30 01:26:35

A. They are part of the molecule which is sequenced. 01:26:37 01:26:40

Q. Correct. The capture probes themselves -- and we're talking about these Agilent pull down probes. The capture probes themselves are not sequenced; correct? 01:26:41 01:26:49 01:26:53 01:26:55

A. No. The capture probes are not sequenced. It's the DNA that you have captured which is sequenced. 01:26:56 01:26:59 01:27:02

Q. Right. But the barcodes are sequenced? 01:27:02

A. Yes, they are part of the molecule. They're not part of the capture probe. 01:27:06 01:27:10

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. Right. So the barcodes are not part of the capture probes. They're part of the molecule that's being sequenced; correct? 01:27:12 01:27:14 01:27:17

A. Yes, that's correct. 01:27:19

MR. HEINRICH: So I think that's all I have obviously subject to redirect. 01:27:25 01:27:27

MR. LUMAN: Okay. Let's go off the record. 01:27:29

THE VIDEOGRAPHER: We're going off the record. The time is 1:27. 01:27:41 01:45:45

(Recess taken.) 02:28:16

THE VIDEOGRAPHER: We're back on the record. The time is 2:28 p.m. 02:28:16 02:28:38

EXAMINATION 02:28:42

BY MR. LUMAN: 02:28:42

Q. Mr. West, do you remember being asked questions about PCR primers earlier today? 02:28:43 02:28:46

A. Yes, I do. 02:28:49

Q. Do you remember being asked whether you ever tried to use PCR primers to capture DNA for sequencing? 02:28:50 02:28:52 02:28:57

A. That's not what I remember thinking the question was at the time. I've seen a preliminary draft transcript of the session and now understand that the question did include that term, "capture." 02:28:57 02:29:00 02:29:04 02:29:07

And so I guess I would clarify that PCR is 02:29:11

Foresight EX1222
Foresight v Personalis
IPR2023-00317

not a capture process. It makes copies of the DNA, and that in PCR, it wouldn't be unusual that the original molecule that created all the copies doesn't even end up in the result at all. All you end up with is the copies. 02:29:15 02:29:20 02:29:24 02:29:27 02:29:31

And so I don't consider PCR to be a capture process, and I wouldn't use that term. 02:29:32 02:29:35

We have used PCR, not to capture, but just to amplify DNA so that it can be selectively sequenced, but I wouldn't use the term "capture." 02:29:39 02:29:43 02:29:48

MR. LUMAN: No further questions. 02:29:50

EXAMINATION 02:29:52

BY MR. HEINRICH: 02:29:52

Q. Okay. So after my questioning ended at 1:27 p.m., you and counsel took over an hour break; is that right? 02:29:53 02:29:57 02:30:02

A. I don't know. I didn't keep track of the time. I'm sorry. 02:30:02 02:30:04

Q. We started here at 2:28. So an hour and one minute; correct? 02:30:05 02:30:10

A. I don't know what the time was. As I said, I didn't keep time. You sound like you kept track. So if you want to make a statement, you can make a statement. 02:30:10 02:30:13 02:30:15 02:30:15

You can't ask me, "correct," because I can't 02:30:20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

verify that. I didn't -- somebody else could verify it, but I -- I just didn't keep any records of that. 02:30:21 02:30:23

Q. So during this long break, you and your counsel discussed the fact that you agreed that PCR primers captured DNA; correct? That was your testimony earlier today? 02:30:24 02:30:29 02:30:38 02:30:41

MR. LUMAN: Objection; mischaracterizes his testimony. 02:30:43 02:30:45

THE WITNESS: So I discussed a number of things with my -- with our counsel. I don't know if it's appropriate for me to be discussing materials that I discussed with our counsel. 02:30:45 02:30:47 02:30:49 02:30:52

BY MR. HEINRICH: 02:30:55

Q. You've seen references to PCR primers capturing DNA in the literature, haven't you? 02:31:00 02:31:10

A. I -- I don't recall any. It's -- there are -- lots of things can be in the literature. It doesn't make them technically correct. 02:31:13 02:31:16 02:31:19

And so what actually happens in PCR -- this was developed by Kary Mullis back in the '80s -- was that you make a copy going in one strand and then a copy going in the other strand. 02:31:21 02:31:25 02:31:29 02:31:32

You can end up with hundreds of thousands of copies, and generally, all of those copies are the same length, and they are generally all shorter than 02:31:34 02:31:37 02:31:39

Foresight EX1222
Foresight v Personalis
IPR2023-00317

the original molecule. 02:31:43

And as a result, if you have any kind of a size selection process later on in your sample prep, the original molecule typically would get left out, and all you'd end up with being left for the sequencing would be the -- the copies, not anything that's been captured. 02:31:45 02:31:47 02:31:51 02:31:54 02:31:57 02:32:01

I tend to think of a capture as being something -- where there's something out there, and I go get it as opposed to that I go make Xerox copies of it and keep the Xerox copies. 02:32:02 02:32:05 02:32:07 02:32:12

Q. That's how you think of capture? 02:32:14

A. I think of capture as being something where I go get something. I'm going to capture something that's out there whereas opposed to I'm going to go synthesize something new and make many copies of a -- an original. 02:32:16 02:32:18 02:32:20 02:32:23 02:32:26

Q. Do the claims of the '394 and '033 patents require sequencing the original DNA molecules in the sample? 02:32:27 02:32:34 02:32:40

MR. LUMAN: Calls for a legal conclusion. 02:32:41

THE WITNESS: The claims do not require sequencing the original molecule. However, that doesn't make capture and targeted PCR the same. 02:32:42 02:32:47 02:32:52

BY MR. HEINRICH: 02:32:56

Foresight EX1222
Foresight v Personalis
IPR2023-00317

Q. In fact, just using an Illumina sequencer involves making CAD copies of the DNA that you want to sequence; correct? 02:32:57 02:33:03 02:33:07

MR. LUMAN: Objection; foundation. 02:33:08

THE WITNESS: I think the question is not quite right because there are two different kinds of PCR amplification involved. One is PCR amplification of a specific genomically specific target, and that's one thing. 02:33:10 02:33:12 02:33:15 02:33:20 02:33:24

And then, as a separate thing, where you put a -- an adaptor on the molecule so that every molecule has the same tail, and then the PCR primer just target the tail. And that's different from using PCR to selectively amplify just one part of the genome. 02:33:25 02:33:27 02:33:31 02:33:37 02:33:40

So those are different things, and I think it's important to separate them out and not conflate them when it really isn't the same thing. 02:33:46 02:33:47 02:33:52

Q. The claims of the '394 and '033 patents don't require sequencing the original DNA in this sample; correct? 02:33:55 02:34:02 02:34:04

MR. LUMAN: Asked and answered, foundation. 02:34:04

THE WITNESS: So the claims of the '033 patent and the '394 patent do not call for sequencing the original molecules from the sample, but there is a difference between site specific amplification, PCR 02:34:05 02:34:07 02:34:14 02:34:19

Foresight EX1222
Foresight v Personalis
IPR2023-00317

amplification of a particular type of the genome and just broadly amplifying everything in a sequencing library. Those should not be treated as being the same thing. 02:34:26 02:34:31 02:34:34 02:34:37

MR. HEINRICH: I'm done. No more questions. 02:34:44

MR. LUMAN: I would like to mark the transcript "Confidential" now, and I want everybody to make sure we can get as much unredacted as possible. 02:34:52 02:34:54 02:35:00

MR. HEINRICH: -- 02:35:02

THE VIDEOGRAPHER: We're going off the record. The time is 2:35 p.m., and this concludes the testimony given by John West. 02:35:03 02:35:05 02:35:09

(Whereupon, the December 8, 2023, deposition of JOHN WEST ended at 2:35 p.m.)

---o0o---

Foresight EX1222
Foresight v Personalis
IPR2023-00317

R E P O R T E R' S C E R T I F I C A T E

I, R. CHAYO AYON, duly authorized to administer oaths pursuant to Section 2093(b) of the California Code of Civil Procedure, do hereby certify that the witness in the foregoing deposition was by me duly sworn to testify the truth in the within-entitled cause; that said deposition was taken at the time and place therein cited; that testimony of said witness was reported by me and thereafter transcribed under my direction into typewriting; that the foregoing is a complete and accurate record of said testimony; and that the witness was given an opportunity to read and correct said deposition and to subscribe the same.

Should the signature of the witness not be affixed to the deposition, the witness shall not have availed himself/herself of the opportunity to sign or the signature has been waived.

I further certify that I am not of counsel nor attorney for any of the parties in the foregoing deposition and caption named nor in any way interested in the outcome of the cause named in said caption.

DATED: DECEMBER 13, 2023

R. CHAYO AYON
Certified Shorthand Reporter
Certificate No. 12372

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

&

& 2:19 3:11

0

003 48:2
033 25:23 26:7 34:20 35:11 48:2,20 49:16 109:3,15,19 138:3 142:21 144:24 155:20 173:18 174:18 174:22

1

1 1:15 6:13 7:14 30:1 45:12 79:25 99:4 134:9 145:21,23 146:1,7,10,22 147:13 148:4 150:10,22 151:20
1,370 125:16
10 60:17
100 24:18
101 142:16
103 164:1,5,6,7 165:12,20
10:14 78:18
10:22 78:21
11 6:9 60:20 77:1,11,12,15 118:22,24
11,384,394 1:8 2:8
11,408,033 1:8 2:8
118 6:8
11:00 20:9
11:57 138:8,9
12 6:3 60:21 70:6 77:15
12372 1:24 2:21 176:25
12:36 138:9,11
13 77:15 78:6,7 80:19 138:23 139:2 176:22
130 6:10 132:4 132:20
134 6:13
14 6:7 50:12 51:16 121:6
1463 69:3
154 6:12
157,000 70:8
158,000 70:8
15th 101:12
162 142:13,17
166 164:8,19 165:4
17 60:12,18 62:12 63:14 130:21 135:5
170 5:6
171 5:7
176 1:15
1800 3:12 110:2,4,6
19 6:12 155:1,5 157:7 158:19 159:7 162:11
1982 35:2 79:19
1986 79:23
1:27 170:9 171:15

2

2 30:1 37:2,4 40:21 137:20 152:3
2.71 39:3
2.715 37:6
2.715. 41:21
2.8 41:17 43:16 44:20
2.85 39:5 45:8
2.85. 38:25
20 45:12 49:11 112:9 128:12 128:12,14,16 128:23,24 129:4
2001 80:6 90:23 103:23
2002 80:14
2004 80:6 90:24 103:24
2008 12:2 48:11
2009 34:10 63:10 117:15
201 2:20 7:20
2010 34:10 64:2 103:4,17 117:12
2011 21:19 26:16,19 27:2 64:16,17 88:16 90:13 94:14,22 101:12 135:4 136:25 142:19
2012 6:8,9,10 6:12,13 17:25 18:3,15 19:17 19:25 20:25 35:12 48:3,25 50:16 51:1,11 54:13 56:20 57:13 58:24 63:8 64:6,9,20 65:9,24 69:20 77:1,22 80:22 80:24 82:19 94:11,17 97:6 98:20 110:9,11 110:20 111:8 116:22,24 117:23 118:20 119:15 121:2 122:7,19 125:5 129:23 131:3 134:9 143:2,3 153:25 155:2,5 157:7 158:19 159:7 160:1,17 160:22 161:6

Foresight EX1222
Foresight v Personalis
IPR2023-00317

161:10,23 162:11
2013 126:7 133:4 151:19 153:20 154:16 155:18 156:24 156:25 157:6 159:6 162:19 163:19
2014 111:7 153:20
2016 153:20
2021 28:10
2022 26:21 27:2 28:8 29:14,22 39:24 40:1
2023 1:14 2:19 7:3,7 64:10 175:13 176:22
2023-00224 7:19
2032 6:3 12:9 12:10,12
2038 6:4 22:15 22:16,17
2041 6:6 50:6,7 50:8 51:2
2046 6:8 118:13,14,15 121:6
2046.14 121:7
2063 6:9 76:15 76:18,22 80:19
2084 6:10 130:19,20 131:1
2093 176:3
2098 6:12 154:17,18,23 154:24
2099 6:13 134:2,4
2112 6:15 50:17,19,24 56:1,4,9 83:7,8 86:8 130:8 138:20,24
2114 6:16 36:1 36:2,3,5
212 19:9
2122 6:17 39:25 40:3,4
213 19:10
214 20:3
22 6:4
2632 3:5
268 3:6
2:00 6:5 22:21
2:28 170:12 171:19
2:35 175:11,14

3

3 111:20,22,23 113:20 115:16 129:22 130:8 130:11 134:3 134:13 137:20 143:2 152:3
3.2 37:9 38:19 38:23 39:7,7 39:11 46:17
3.8 41:20
30 136:14
300 3:23
310.203.7668 3:15,18
310.592.3030 3:8
350 45:5
3579 3:22
36 6:16
372 19:7,10 20:10,23 22:5 24:13,17
378 20:6
39 6:17
39.3x 41:7
394 25:23 26:7 34:19 35:12 48:1,21 49:16 109:3,15,18 138:2 144:23 145:15,20 150:11 155:20 173:18 174:18 174:23
3rd 6:4 22:20

4

4 6:10 73:3 94:25 131:3 152:4
40 35:1
46 103:5
4:30 6:5 22:21

5

5 39:4 56:10,12 59:21 64:21,25 64:25 65:19 67:16 83:7,8 86:3,8 91:14 94:24 97:23 104:2,7 106:15 107:16 111:16 112:22 113:6 115:3,5 116:4 116:10,19 121:2 123:11 127:3
50 6:6 160:19
500,000 31:16
56 6:15
5th 20:7,8

6

6 6:8 11:16 118:20
60 160:19
600,000 31:16
63 76:16
6319931 1:25
65 28:9,16 29:7
66 30:22

7

7 11:17
7204 141:25 142:3

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

76 6:9

8

8 1:14 2:19 6:7 7:3,7 35:12 48:3 50:12,16 50:25 51:16 57:13 64:6 65:24 143:3 175:13
80s 172:20
84 37:8 39:13
858.707.4000 3:25 4:1
8:21 2:18 7:6
8th 49:14 50:19 51:19,21 53:9 54:13 55:7,10 56:20 66:3 69:20 121:2 138:25

9

9 5:5 60:1 61:4 61:16 63:2 65:18 66:1 68:3,23 69:22
90 42:5,10 43:2 43:16 44:1
900 3:13
90067 3:14
90403 3:7
92 41:8
92130 3:24
94065 2:21 7:22
95 39:3 42:7
95.1 37:16 38:15
9:00 20:9
9:18 47:11
9:24 47:14

a

a.m. 2:18 7:6 20:9 47:14 78:18,21 138:8 138:9
ability 95:11 129:25 137:9
able 13:17 17:9 28:18,22 37:15 43:8 46:4 60:7 61:21 62:16,20 63:15 65:12 103:11 107:10 107:16 108:8 108:13 109:1,9 109:14 126:16 130:6 143:25 169:1
above 24:23 31:23 42:9 86:5 124:9 164:21
absolutely 117:18 124:11
academic 40:11
accelerate 78:4
access 13:16 22:10 66:25 67:9 69:15,16 69:21 70:2 141:17
accessible 39:8
accidentally 142:1
accomplished 30:15
account 43:13
accumulated 49:24
accuracy 19:17 19:25 20:13 56:17 61:5,7,9 61:15 62:17 65:7 70:17,21 70:22 71:2,3,4 71:9 74:22 99:6,19 100:1 101:4,20 110:14 116:3,9 116:10,13 122:21 124:23 125:1,25 126:4 135:9 136:1,10 136:13,15 137:13,16,23
accurate 61:18 62:24 99:12 101:9,25 116:5 127:6,6 176:11
accurately 28:5
ace 111:9 126:3 126:9 133:3 148:3,8 149:1 150:16 151:3,7 151:9,19
achieve 44:6,7 46:4 61:2 93:24
achieved 42:6
achieving 42:7
acquired 10:5,6
act 158:10,11
action 8:2
actually 10:25 18:10,15,16,21 19:15 23:19 29:10,11 30:1 30:18,22 43:1 44:8 69:13 79:20 84:20 87:20 104:2 107:10 108:19 117:22 124:8 125:4 127:10 131:15 132:23 134:23 141:17 144:19 145:6 148:18 158:16 160:10,13 163:23 172:19
adaptor 174:11
add 44:5 82:20
added 39:4 151:23 168:21
adding 82:15 84:3 164:15
addition 13:9 69:11 96:8

additional 60:19 66:8 67:18 102:6,7 121:7 127:16 142:19 153:19
address 35:10 71:9 99:20 121:21 122:20 124:15 140:10
addressed 36:18
addressing 49:23 99:6 100:1 120:21
adequate 97:7
administer 8:1 176:3
advance 51:18 51:21 52:9 53:15 54:13 55:9
advanced 109:20,21
advances 73:16 100:16 125:24 126:8
advantageous 114:20
advocate 159:24
advocated 33:7
affairs 125:12
affect 32:7 106:11
affected 32:10 133:23
affiliations 8:8
affixed 176:15
afflicted 152:13
affymetrix 86:14
african 101:1
agbt 126:6,7
age 106:10
agilent 84:18 85:15 88:14 89:17 90:6,11 90:17 91:16 92:7,12,25 93:12 94:6,13 94:21 101:16 102:9,20 119:23 120:20 126:10,11 165:9,13 166:7 166:16 167:21 169:17
ago 9:9 10:2,25 13:14 14:23 23:15 41:19 54:7 56:3 77:7 106:4
agree 7:13 16:19 83:6 88:1
agreed 29:21 172:4
aha 49:15,25
ahead 52:2,14 54:2,4 165:1
aheinrich 3:16
aimed 103:24
akrause 3:17
alan 3:15 8:10 9:10 130:21
algorithm 101:5 107:3
algorithms 42:18 107:1 124:20 125:9
align 101:2
aligned 131:2
aligning 38:6
allow 45:21 64:4 120:4
allows 84:2
alluded 166:8 166:22,25 167:5,7 168:10
alluding 93:18 167:9
alternative 62:19 156:13
altman 136:19
american 10:6
amir 3:8,9 8:13
amount 44:8
amounts 120:2
amplification 174:7,7,25 175:1
amplify 96:23 171:9 174:14
amplifying 175:2
analysis 42:20 62:19 67:13,14 92:2 110:8 118:2 125:16 125:22 128:1 128:19 144:11 148:12 149:9 149:25 151:10 151:12,14 152:6
analyze 107:4,8 132:5,22 152:9
analyzed 66:22 87:21 107:11 125:21
analyzerii 41:3
ancestry 133:23
andrew 3:17
angeles 3:14
answer 9:13 14:12 15:13 16:7,10 20:20 27:3 31:11,20 32:5,8 59:12 66:18,20 79:1 79:11 81:14,19 97:15 112:14 126:1 153:5,7 153:8 157:9 160:9 162:21
answered 55:5 55:11 59:1

Foresight EX1222
Foresight v Personalis
IPR2023-00317

150:3 174:21
answering 81:18 159:10
answers 72:16 79:4 149:16
anybody 14:3 68:12 163:23
anymore 22:11 34:2
appeal 1:2 2:2
appearance 8:6
appearances 3:1 8:8
appearing 3:17
application 135:10 137:19 144:15 155:18 157:13,19,20 157:24 158:2 158:17 159:6 160:4,11 161:5 161:16,22 162:1,4,8,15,18 162:25
applications 76:7 111:15 135:8 137:15 138:1 144:5 152:25
applied 80:5 90:23 95:18 96:25 103:23
apply 84:9 105:7,9 113:8
applying 155:9 155:16
appreciate 81:18 167:17
approach 84:23 92:24 93:20 101:10 105:21 120:20 156:9,13,22
approaches 65:15 99:10,21 99:22 100:9 121:17
appropriate 33:8 38:18 101:3 172:11
appropriately 142:20 143:5 144:12
approval 70:7 70:12 138:16
approved 60:22
approximately 11:10,14,16 17:1 37:8 38:25 39:2 44:20 45:3,5 46:16
april 103:17 117:12
area 43:5 47:1 106:5 108:21
areas 15:14 16:4 53:13
82:5,6,6,9,13 97:14 126:12 135:17 150:20 154:7
argumentative 144:7
arguments 163:3
arrange 38:10
arranging 26:18
array 85:23 86:1,6,9,11 87:6,18,20,22 91:13 92:15 93:9,13,14,17 93:18 96:10 97:24
arrays 86:19,20 86:23 87:3,4,9 87:25 88:2,10 88:20 89:7,13 90:21,25 91:22 91:24,25 92:9 93:10
art 88:8 109:13 110:7 132:6
article 6:17 40:5,9 41:12 42:15 101:12
asap 155:8
ascribe 143:6
ashley 90:11 136:19
asian 100:24
aside 25:11 88:18 154:19
asked 20:17 55:11 59:1 79:13 85:6 93:3 113:17 132:21 150:2 153:2 158:4 170:15,18 174:21
asking 16:15 20:19 40:4 67:20,24 88:1 93:1 105:18 118:21 157:18 158:8,10,24 163:13
aspect 23:14 26:2
aspects 26:3 116:13 154:9 161:7
assay 107:9 126:2 156:24
assays 136:10
asserted 34:19
assessing 38:16
assets 31:2
assigned 136:23
assignment 136:20
associated 135:14

Foresight EX1222
Foresight v Personalis
IPR2023-00317

assume 41:15
assumed 28:17
assuming 107:18
attached 167:1 168:2,4
attaching 50:15
attempt 42:5
attend 23:20 53:4
attended 22:25 24:6 117:13 142:18
attendees 23:19
attention 25:7 30:23 40:22,24 59:11 117:17 138:22
attorney 8:9 13:3 158:9 159:21 176:19
attorneys 12:18
audio 7:11
augmented 126:5 127:4,15 148:15
august 18:3,15 19:17,25 20:25 26:19 135:4 136:24 153:19
authorized 8:1 176:2
automatically 19:20
available 17:8 75:4
availed 176:16
avenue 3:12
average 41:7
avoid 24:2
aware 33:14 48:12,15 50:4 84:13 88:20 91:21,22 93:19 116:25 117:5 117:12,18 118:5 162:16 164:12
awareness 118:12
awkward 63:18
ayon 1:23 2:17 2:21 7:25 176:2,24

b

b 6:1 107:2,2 176:3
back 12:1 18:3 24:18 29:8 34:10 42:25 47:13 51:2,4 55:4 57:9 64:25 78:20 80:19 83:7 86:2 94:23,25 98:25 110:20 138:10,13,20 138:24 166:13 170:11 172:20
background 26:9 100:22,23 100:24,25 129:18 135:20 146:4
backgrounds 136:8
ballpark 27:25
barcode 164:16 169:6,9
barcodes 166:12 168:14 168:21,25 169:12,23 170:1
base 37:5,6,9 43:16 44:21 46:17 153:22 162:5
based 20:24 21:4,5 22:6 42:13 74:1 91:13 93:17 101:19 105:11 110:5,8,14 111:7 148:12 163:19
bases 38:19 39:3,12 45:8 45:12
basis 12:18 35:23 48:20 94:3 107:6
bead 84:23 85:20,21
167:23,25 168:2,6,6,7
beads 84:7 85:5 85:18 91:18 94:5 167:5,12
began 26:18,19 29:4,8 61:23 63:22
beginning 8:8 20:3 21:24 64:19 81:15 125:14 137:22 145:22 159:24
begins 60:1
begun 63:2 64:2 66:4 159:18
behalf 8:11 9:2
behave 93:22
believe 13:12 14:8 19:9 26:7 32:23 35:13 39:24 45:8,25 46:10 48:22 49:11 54:17 73:8 84:22 95:9 101:8 103:16 112:9 131:10 132:1 134:23 151:13 153:20
beneficial 131:21
benefit 80:2

Foresight EX1222
Foresight v Personalis
IPR2023-00317

best 9:24 19:14 28:6
better 23:8 64:4,4,5,5,23 64:23 65:13,23 92:12 93:24 96:3 125:8,9 151:22,22
beyond 96:6 127:10 131:15
bias 119:16,17 120:16 123:16 126:15
bid 125:15
biggest 131:8
billion 37:6,9 38:19,23 39:3 39:7,7,11 41:18 43:16 44:20 45:8 46:17
bind 83:20
binder 12:9 52:16 108:12
binds 84:5 168:5
bioinformatic 99:10,15 100:9 107:12 124:20 125:6,24 127:1 133:12,25 136:8 149:15
bioinformatics 99:13 100:6,7 107:8
biological 128:7
biologically 61:24 126:19
biology 75:11 126:8
biomarkers 110:2,5
biopsies 151:15
biosciences 45:23
biosystems 80:5 90:23 95:18 96:25 103:23
biotin 84:5,5,22 84:25 85:6,19 94:4 168:3,5
biotinylated 95:6 165:9,14 167:21
bit 24:10 48:10 63:18 75:22 83:9 114:23 136:11 162:8
blank 163:21
block 157:12
blood 36:25 41:5 129:18 148:21 149:2
blvd 3:5
board 1:2 2:2 6:6,11 17:23 18:2,6,9,11,14 18:17 19:15,17 19:19,20,22,23 19:24 20:1,5,8 20:11 21:1,21 21:22,23 22:7 23:8 29:4,21 29:23 49:14 50:11,16,18,25 51:11,23 52:1 52:3,9,10,11,12 52:13,19,19,21 52:24 53:5,7,9 53:15 54:2,13 54:14,16,17,21 54:22 55:1,3 56:20,22 57:14 57:17 58:12,16 58:16,23 59:10 59:16 60:22 64:6,19 66:3 70:7,12,25 74:20,22 75:6 76:1,2,24 77:21,22 82:19 88:16 89:13 90:8,12 91:6 91:10 104:5 106:4 107:20 108:1 110:22 113:13 115:9 115:12,18,20 116:11 131:4 134:8 143:3
bold 122:25
book 52:11,14
borrowed 139:20
borrowing 55:19
bottom 99:4 100:12,15
bought 17:5
bounce 137:9
bound 168:6
box 71:18
brain 132:18 137:7
brand 70:4
break 47:1,9,20 78:16,24 130:23 138:6 138:14 171:15 172:3
breaks 47:3
brief 13:1
british 10:5
broad 63:23 66:6,7 68:10 90:17 92:20 124:2
broadly 175:2
brochures 152:21
broke 146:8
brought 13:18
budget 60:21 60:22 70:5
building 159:15

Foresight EX1222
Foresight v Personalis
IPR2023-00317

built 129:10 154:9
bulk 120:9
bullet 78:8,8 135:22,25 139:3 140:6 141:8
business 15:25 29:15 30:15 48:16 55:23 62:15 78:5 80:7,8 90:23 108:3 114:5,13 114:19,23 115:9 116:2
businesses 74:14
butte 136:19
buy 71:15 96:25

c

c 69:3 97:11,11 126:3 176:1,1
ca 3:24
cad 174:2
calculation 38:22 39:16
calendar 6:4 14:21,22 18:5 21:9 22:8,19 24:8 25:5,10
california 2:18 2:21 3:7,14 7:2 7:21 10:7 17:7 36:19 176:4
call 33:10 42:19 49:25 61:8 127:11 131:13 137:23 158:6 160:10 174:23
called 9:2 46:22 48:13 69:2,5 71:7,7 76:8 84:5,6 103:20 104:14 106:16 107:5 111:8 116:1 126:3 129:17 131:18 132:15 133:10 135:5 148:22 151:20 152:17 154:6 161:8,11
calling 147:10 158:4
calls 14:12 16:7 27:20 34:21 43:18 95:8 143:8 150:12 157:8 173:21
cambridge 17:6 29:13
cameron 4:9 7:23
canceled 18:10 18:12
cancer 32:13 48:13 75:7,11 75:14,17,21 76:9,10,14 78:11 79:14 80:3,13,17 81:6 82:1,5,6 82:11,14 83:4 95:1,5,12 104:19 111:15 116:21,24 117:2,19 118:9 127:18 129:2 129:15 154:5,5 154:7
capabilities 58:20 70:23 82:20,21 109:18 151:24
capability 59:9 59:23 129:10 131:23
capacity 125:19
caption 176:20 176:21
capture 37:21 48:13 83:20,25 84:4,12 85:2,8 85:13,16,24 86:9 87:6 88:2 88:14,21 89:16 89:23 90:3,7 91:13,15,16 92:5,10,13,15 93:9,11,25 94:2,3,4,7,9,10 95:4,16 96:3 96:17 102:8,10 104:21 105:17 120:14,14 126:11 147:6,6 151:1,6 166:11 166:15,21,21 166:25,25 167:14 168:23 169:16,18,20 169:25 170:2 170:19,24 171:1,6,8,10 173:8,12,13,14 173:24
captured 91:17 94:5 120:7 166:3,5,7,9,15 166:18 167:3 167:24 168:10 168:14 169:21 172:5 173:7
capturing 87:10 89:7 97:7 126:24 172:15
cardiology 82:8
care 83:1
career 75:20 95:17
careful 25:18 141:16 144:11
carefully 18:8 25:2,16 44:15 132:12
carol 6:6,10,12 6:14 50:10

Foresight EX1222
Foresight v Personalis
IPR2023-00317

53:12,12 76:23 131:2 134:6 155:1
case 7:18 22:4 22:5 34:19 49:10 132:6 143:18 144:3
cases 57:23,25 58:1 74:6,9 100:10 102:4 124:10 148:16 148:17,19 149:3 151:15
cash 31:2
catch 169:13
categories 121:7 122:3,4 124:21
categorizing 121:14
category 106:18
cause 176:7,21
caused 62:14 121:12 133:15
causing 132:23
caution 12:22
celera 69:14
celexa 10:4,5 12:4 84:21 90:16
cell 112:1 164:15 166:1,4 166:6
center 106:24
centers 60:7
centre 3:22
centromere 45:12
centromeres 37:22
ceo 10:4 23:8 26:14,20,20,24 28:2,10 30:7 33:1 35:19 63:17 90:16 138:25
ceph1463 60:13 69:2
certain 15:14 59:7 61:2,3 82:3 83:24 86:24 97:13 98:12,12,20 99:5 100:14 102:17 104:11 116:15 122:2,5 123:7 140:16 140:18 142:3 146:5
certainly 21:7 38:1 52:10 53:11,20,24 54:19 55:2,14 55:21 72:22 75:20 92:17 94:13,21 95:17 97:20 98:7 108:21 117:11 118:5,11 128:25 129:5 130:4,5 136:12 137:18 145:2 145:18 149:12 150:16 152:8 152:19 154:15 156:3 160:11
certificate 176:25
certified 2:17 176:24
certify 176:4,18
chairman 67:2
challenges 30:11,13,13,16 30:17,20,21 71:4
change 17:18 32:3 85:11 114:4,18 123:22 124:10
changed 75:4 85:8
changes 24:14 31:4 123:14 124:7
changing 31:5 62:17 123:13
characteristics 141:1
characterizati... 16:20 33:17 64:16 65:20,21 102:14 128:5
characterize 62:25 63:6 65:3,7,18 68:17 70:16 74:17
characterized 64:11 73:8 121:9
characterizing 64:8 99:2 103:25 121:4
chayo 1:23 2:17,21 176:2 176:24
check 50:22
chemical 84:1,4 84:5,14 123:6 123:7
chemically 96:16
chen 6:12 75:15 76:3,23 155:1
chen's 133:11
chief 75:15
child 62:3,6 152:12
choices 123:6
choose 28:25
chris 131:7
christian 76:24
chromosomal 41:8,13
chromosome 45:12 46:2,3

Foresight EX1222
Foresight v Personalis
IPR2023-00317

chromosomes 37:22 41:16 44:25
church 40:17
circa 64:9 98:20 117:23
circulate 52:3
circulated 52:8 52:9 53:8,14
circulating 51:25 52:18
circumstance 11:2
circumstances 89:2
cite 24:24 109:6
cited 176:8
city 2:20 7:2
civil 176:4
claim 26:8,9 35:10 145:21 145:22 146:1,4 146:4,7,10,19 146:21,22 147:13 148:4 150:10,22
claims 25:25 26:6 34:18,19 35:11 48:1 49:16 144:24 145:1,4 146:5 146:6 173:18 173:22 174:18 174:22
clarification 72:9 98:17,18
clarify 170:25
clarifying 60:23 71:25 72:5
clarity 118:23
class 106:19
clear 35:25 49:5 57:8 62:20 72:17 118:18 130:7 163:4
clearly 115:19 115:25 137:21
cleaved 93:14
client 158:9
clinical 76:6 110:24 111:10 112:2 132:5 141:15
close 27:4,12 27:18 93:20 145:16
closed 59:21
closely 49:2 90:17
coach 79:9
coat 85:5
coated 91:17 94:5
cocounsel 8:12
code 176:4
coding 126:12 126:18,21,23 127:12
cofounded 26:15
cofounder 49:3 67:3
cofounders 40:15 90:10 130:13
coinventor 35:8
coinventors 34:18 35:11 159:20
collaboration 12:20 14:10,16 66:24
collaborative 12:17 14:2
colorado 32:22
column 65:3 66:1 83:11,12 83:16 98:25 99:1,4,17 100:2,4,5,11,15 105:1 106:23 106:24 121:3 134:24 135:22 137:2
columns 65:1
combination 77:5,24 78:5 81:2 85:19 112:23 127:25
combine 95:23
combining 78:9 81:5,23 82:9
come 24:18 26:4 28:25 48:22 49:5 62:24 64:3 71:2 93:12 94:23 108:14 108:15 110:12 116:4 160:21 166:13
comes 39:4
coming 141:1 160:25 169:3
commencing 2:18
comments 76:25
commercial 110:23,24 133:5 148:9,10 153:1
commercialize 148:3
commercializ... 90:24 95:19 124:25 131:25 147:18 148:6
commercializ... 80:16 91:1 111:5
commercially 94:2 150:25 151:6

Foresight EX1222
Foresight v Personalis
IPR2023-00317

common 152:11 165:5
commonly 84:3
communication 12:23 16:8 158:9
communicati... 14:13
companies 31:3 72:20,24 73:1 73:4,11,12 74:10,11,13,13 74:20 89:6 94:1 111:2 116:21,23 117:4 118:6,8
company 10:4 10:6,6,8 16:1 21:16,18 22:8 22:10 26:15,16 26:18,19,20,21 26:22,24 27:5 27:13,23 28:4 28:10 29:2,2 30:12,14,17 33:1,25,25 35:6,7,19 49:3 52:5,7 63:17 67:3,6 68:1 69:14 72:4 73:18,22,25 74:4 77:6 115:24 117:11 117:17,19 134:15 135:19 139:14 144:19 144:20 162:2,6
compare 39:11 133:12
compared 67:6 123:19
comparing 105:25
compete 117:20
competing 117:23
competitive 118:2 125:15
competitor 117:7
competitors 72:20,22 73:9 73:10 74:17,18 116:22
complete 37:25 46:5 66:17 67:6 73:5,21 77:5,24 79:5 79:11 81:2,14 81:23 82:7 107:13 127:10 176:11
complete's 78:10 81:6
completed 45:23 49:4 64:7 131:9
completely 9:13 64:12
complex 76:9
component 101:21 102:1
components 147:3
compose 107:23
composed 62:4
comprehensive 65:22
computational 123:6
computer 21:20
conceivable 158:12
conceived 35:11 48:2,6
concentrations 120:11
concept 49:19 114:25 147:19
conception 34:18 47:23 67:15 109:7,9 110:1 143:13 146:2
concepts 49:20 108:15
concern 110:21
concludes 175:11
conclusion 34:22,25 143:9 147:10 150:12 173:21
condensation 52:25
conditions 120:3,5,9,10
conduct 59:19 97:2,17,17,19 104:17
conducted 36:10
conference 117:13 126:7
confident 92:24 128:3
confidential 1:12 27:8 30:3 43:19 175:7
confirm 47:15 76:22 154:25
conflate 174:16
confluence 49:19
confusing 72:2
confusion 59:3
connection 146:23 162:13 163:3
consensus 37:5 37:15 38:5,14 39:1 41:18 43:11
consequence 141:14
consider 33:21 110:6 155:8

171:6
considered 37:25 39:8 72:19 85:12 119:17 129:24 150:7
considering 78:3 81:23 84:17
consistent 46:16 52:20
consistently 123:14
consisting 37:9
consortium 46:23
constant 122:15
constructive 157:11,14 158:18,20 162:23,24
contact 99:24
containers 140:19
contemplated 74:25 93:3,5 101:17
contemplating 81:1 91:12 92:9 99:16,25 101:24 117:22 137:15 139:23
content 53:24 55:13,22,24 83:13 96:20 99:22 100:8,12 100:19 101:6 105:2,5,7,14,15 105:16 119:24 120:2,12,14 123:17,20 124:18 125:10 126:4,13,20,22 127:2 150:19 160:3 161:1,5
contents 158:9
context 10:3 32:18 88:8 115:13 143:23
contexts 86:1
continuation 64:1
continuations 138:2
continue 7:12 32:11 44:5
continued 28:16 29:20 66:5,8
continuing 64:14 97:23
continuously 153:25
contract 60:11 60:20
contribute 143:11,12
contributed 144:16,17,18 144:19,20 153:21
controlled 122:25 123:21 132:6
conversations 7:10
conveyed 36:22
conveying 137:7
convinced 29:19
coordinate 140:24 141:2
copied 134:7
copies 67:11 145:9 171:1,3 171:5 172:24 172:24 173:6 173:10,11,16 174:2
copy 43:21 49:1,7 50:25 172:21,22
copyrights 135:13
core 162:9
corporate 33:11,22
correct 9:18 14:7 20:13,25 22:21 24:25 31:2 32:19,23 35:12,13 36:11 37:7 39:13 43:17 45:17 48:3,4 50:13 50:17 51:11,22 56:14,15,17,18 56:21,23 57:17 58:13,25 59:3 61:5,6,9,19 63:1 65:1,2,10 66:1,14 68:4 68:18,20 69:22 70:13 71:12 74:25 75:8,12 76:11 77:3 78:12 79:15 80:22,23 81:2 81:3,8,9 83:13 83:16 85:1,20 86:6 89:24 90:4 91:14 94:12 95:2,7,9 97:8 98:1,5,10 99:7,10,13,18 99:22 100:2 102:18 104:3 106:2 110:3 112:12,17 113:4,10,22 116:6,7 119:12 121:5,16 122:16 124:8 125:2 127:7 131:6,12 132:7 134:10,16,17 134:18,22 135:23 136:1,4

136:21 137:3 137:16 138:3,4 142:23 143:3 144:11,24 146:2 147:15 151:11 155:20 165:14 166:1,8 166:18,23 167:2,24 168:11,16 169:13,16,19 170:3,4 171:20 171:25 172:5 172:18 174:3 174:20 176:13
corrections 26:11
correctly 20:20 57:11 111:22 159:19
cost 96:12,14
counsel 3:3,20 4:4 7:15 8:7 10:22 12:24 13:5,12,21,22 14:6 15:15,22 16:5,10,17 47:19 78:24 138:14 171:15 172:4,10,12 176:18
country 29:11
couple 79:1,16 123:12
course 14:15 17:15 25:18,22 27:1 28:1 47:8 116:6 161:10
court 7:24 8:18 9:21 32:22
covalently 168:6
cover 42:5 45:14 58:9
coverage 38:16 41:7,25 42:14 43:6 102:14 119:16
covered 37:16 38:15 39:13 42:8 109:14 150:21 151:2 151:24 153:17
covering 44:1
craig 60:15 69:11,12
created 163:21 171:3
cross 24:17
cs 119:19
csr 1:24 2:21
current 14:6 31:23 32:2 37:20 64:8 68:17 70:16 99:2 109:5
custom 68:4,5 68:12,22 69:21 97:25 104:10 104:14,15 105:2,2,4,8
customer 71:22 74:8 95:11 114:10,20 125:11 128:11 128:14,20,23 132:13 140:17 140:24
customers 102:13 111:10 111:10,12 114:14,14,15 114:19 118:11 128:8,25 151:13 156:11 156:19
cut 81:12

d

d 5:1 23:24 53:19,23 54:3 55:9 131:8
data 36:15 42:14,21 44:6 46:5 49:9 59:7 60:4,8 61:3,11 61:13 62:19 63:6,11,13,20 66:5,8,22 69:15 70:2 71:22 86:20,23 101:9 102:6,7 102:11,24 106:9 107:4,8 107:10 112:9 119:20,21 120:24 124:1 125:16,21,22 127:25 128:10 128:19 133:12 142:8 169:2,10
databases 135:1
dataset 62:13 65:22,23 78:11 81:7 127:10
datasets 60:2 61:5,15,16 64:4 65:13,17 65:25 66:5 67:18 68:4,6,8 68:14,16,22 69:21,23 70:10 70:13,15 82:3 82:4,15 128:13 128:16
date 20:4 23:5 46:21 47:23 63:11 155:4 161:12
dated 6:4 22:20 23:3 176:22
dates 21:12 46:24 94:19
day 26:22
days 33:23
db 135:2
de 140:8 141:9 141:10,19

Foresight EX1222
Foresight v Personalis
IPR2023-00317

debated 156:15
decade 80:17
decades 28:24
december 1:14 2:19 7:3,7 28:9 29:22 32:2 175:13 176:22
decide 13:1 81:24
decided 34:5 110:4,8 111:4 162:17
decision 28:13 34:4 162:16
deck 6:15 51:10 51:12,13,14,19 77:14,21 80:21 80:24 81:4
declaration 6:3 12:5,9,16,17 13:4,6,11,19,24 14:3,10 15:4 16:17,23 17:3 17:11,16,19,21 17:23 19:2,10 21:4,8 22:2 24:15,19,21,25 25:3,14,23 26:8 35:9,15 47:24 48:1 56:7,14 108:13 108:17 129:21 142:14 144:25 145:24 146:3 146:13 147:11 150:6 162:14 164:2,6,8
dedicated 103:24
deep 16:16 78:11 81:7
define 44:15
defined 43:4
defining 91:5
degap 44:19
degaped 44:12 44:17
degat 44:16
delete 17:21
deliverable 127:21
deliverables 128:18
demultiplexed 169:2
denominator 38:18
department 67:2 79:21 125:12
deposed 10:1 10:17
deposition 1:12 2:16 7:15,20 10:19,24 11:7 12:6 17:17 138:15,18 175:13 176:5,7 176:13,15,20
derive 57:21 59:7 71:20
derived 141:13 150:14
describe 64:22 104:8 109:4 113:12 116:9 125:2 132:2 135:18 156:18
described 20:2 53:1 57:3,24 58:5 64:20 70:25 72:25 90:8 92:6 101:13 104:4 105:14 106:4 108:16,25 109:3,18 112:22 115:3,8 115:12 116:3 120:13 127:2 130:16 132:12 133:11 143:21 144:1 146:9 147:1,8 152:19
describing 56:22 57:16,20 58:12,14 59:8 59:25 73:13 85:14 105:20 107:20 114:25 115:1,4,6,19 116:10,17 125:3 135:17
description 6:2 76:5 88:5 108:6 109:13 135:15
design 95:11 104:21 105:17 151:5
designed 71:8 74:23 88:15 105:11 106:12 109:23 131:17
designing 160:8
desire 63:16
detail 21:14 23:22 25:6 33:19 53:1 146:12 160:20
detailed 62:13 104:6 108:6
detect 119:21
determination 89:15
determine 37:16
determined 45:2
dev 6:4 22:20
develop 58:19 61:17 62:16 70:22 107:16 109:10,14
developed 13:25 14:1 25:8 32:12

Foresight EX1222
Foresight v Personalis
IPR2023-00317

35:19 80:12 84:20 90:11,18 90:24 94:16 100:20 107:3 109:17 110:14 111:3 112:9 137:24 153:16 161:6 172:20
developing 73:12 80:3,16 90:2 125:8 135:19 162:3,7
development 58:15 89:5 91:7,11 110:10 154:2,11,14 160:17 161:9 161:20
developments 73:3 74:21 75:1,7 94:25 110:20 134:1
diagnostic 72:25 73:1 74:13 75:24 76:6 110:25 116:21,24 117:2,19 118:9
diagnostics 1:4 2:4 7:16 8:12 9:11 32:19,21 75:8
dictionary 91:4
diego 3:24 36:20
difference 17:7 174:25
differences 62:5 96:17 121:25
different 11:1,5 20:19 30:11,16 42:1,16,17,17 42:22 44:9 68:25 69:1 72:22 73:23 74:1 76:5 78:1 79:25 85:24 86:1,9,25 88:7 88:8,9,11 89:1 91:9 96:16 97:20 100:20 100:21,23 107:22 110:2 111:17 113:7 113:14,15,22 113:24 115:2,4 116:13 120:2,5 122:10,18 123:9,13 124:4 125:9 128:24 129:6,14,14,19 130:9 133:14 135:1,5 147:23 150:15 151:3 152:25 154:9 158:6 161:7 174:6,13,15
differently 11:3
difficult 30:8 37:20 96:6 98:8,13 103:1 103:2
difficulties 95:24
diligence 18:23 19:2,8 163:3
diligent 19:4
dimension 130:3
dimensions 30:19
direct 40:21,24 138:22
directing 164:10
direction 39:18 176:10
directions 155:11
directly 93:7 103:8
directors 17:23 20:11 29:4 50:25 56:20 57:14 59:16 64:19 89:13 108:1 110:22 113:13
disagree 82:25
disclosure 109:10 111:16 111:19 129:20 156:16 159:13
159:14,18 163:18
disclosures 159:10
discordant 121:22 124:8 124:11
discovery 133:10
discuss 13:23 19:16 29:20 33:16 115:18
discussed 19:18 19:23 20:12 23:2 35:14 47:25 52:22 53:22 55:14,20 55:22 71:6 88:16 90:9 113:19,21,24 114:1 115:14 126:14 157:2 172:4,9,12
discussing 43:23 55:3,7 55:17 78:9 172:11
discussion 101:15 145:25 146:1 163:8
discussions 47:19 54:11 78:23 138:14
disease 80:1 103:1,10,12

106:5,11,14 132:15,16,17 132:23 133:10 133:13,15,21 133:22 149:4 152:13
diseases 76:8,9 79:25 103:6,7 106:19,20 116:6
dispute 32:18
district 32:22
divided 147:3
dna 35:2 41:4 57:21,23 58:3 58:4 59:17 60:6 62:4 74:2 74:4 79:18 80:7 83:22 84:8 88:21 89:18 90:21,23 90:25 92:10,15 93:9,11,13,17 93:20,21 95:7 95:16 96:17 106:1 118:8 123:5 164:16 164:17 165:12 165:16,21 166:3,5,7,9,15 166:17,22 167:3,4,13,22 167:24 168:9 168:14,15 169:13,21 170:19 171:1,9 172:5,15 173:19 174:2 174:19
docket 135:6
dockets 135:5
document 11:24 15:19 21:14 28:4,7 57:18 61:21 118:19 140:5 140:11 150:5 160:25 161:11
documentary 149:22
documentation 23:6 117:22 159:9 162:12
documented 150:6
documents 11:9,18,21,22 13:10,15 14:18 14:20,24 15:3 21:6,15,22,23 22:1 23:3 104:6 107:22 108:7 109:1 110:1 117:10 118:1,1
doing 24:9 28:24 54:6 77:23 78:4 88:10 89:3 93:24 108:4 113:13,15,22 113:25 114:12 115:21 122:7 129:20 137:10 147:8 160:22
dot 118:24
download 60:7 63:22 66:4,5
downloaded 65:25 66:9 68:10,12
downloading 60:5 69:10 124:1
dr 36:18 40:17 143:1,5 144:12
draft 16:23 52:18 53:9 76:24 160:11 161:11 170:23
drafted 12:17 13:21 18:6 51:19,21
drafting 15:15 15:16 157:5,19 157:20 158:11 158:16,23 159:5 160:7,24
drafts 55:7
draw 153:22 160:15
drew 154:10
drive 3:22
driven 31:4
drug 138:16
due 119:16
duly 9:3 176:2 176:6

e

e 5:1 6:1,6,8,9 6:10,12,13 13:13,17 20:3 50:10,15 51:9 51:15 69:3 76:20,23 118:19 126:3 131:2,7 134:6 154:25 155:7 156:17 157:7 159:7 161:15 161:19,23 162:11 176:1,1 176:1,1
earlier 10:9,12 28:15 41:24 47:25 49:2 50:4 52:3 63:4 65:14 70:25 76:2,4 89:5 101:11 102:19 104:5,5 115:8 144:22 159:17 162:16 163:21 167:20 170:16 172:6
earliest 48:6
early 80:14 88:16

Foresight EX1222
Foresight v Personalis
IPR2023-00317

earnings 33:10
easier 113:12
easily 96:4
easy 28:7
economics 114:18
effect 161:15
effort 14:2 64:1 92:14 154:2
efforts 61:17 62:23 68:16 70:16 93:8 154:14 162:6
eight 17:7
either 15:1 54:4 62:7 101:24 124:17 152:2
elaborate 60:10 62:10
electronically 3:17
element 61:10 70:18 84:4 145:25,25
elements 23:13 48:8,10,18,21 49:7,13,17,18 50:2,5 54:5 61:24 107:7 113:15 123:18 133:8 134:24 143:12 146:7,7 153:21
else's 14:3 115:13
employ 84:14
employed 26:19
employee 10:12
employees 26:17 55:8
enabled 110:20
ended 131:15 171:14 175:14
ends 167:11,14
energy 79:21
england 17:4,6 29:11,15 74:1
enhanced 126:4
enthusiastic 24:3
entire 30:11 37:9
entirely 17:25 137:24 162:7
entitled 157:24 176:6
envisioned 71:12
envisioning 70:20
equipment 74:11 118:8
error 17:22 119:2,8,10,17 120:21 123:14 124:21
errors 17:17 25:19 61:21 62:9,13,21,25 63:7 64:8,11 65:4,7,12,18 67:8 68:17 70:16 99:2,6 119:12,15 120:16 121:4,8 121:11,12,14 121:16,19,21 122:3,4,5,23
esq 3:8,15,17 4:1
essentially 85:3 148:9
established 38:14 93:23
estimate 43:11
ethics 141:12
ethnic 100:21 100:23,24,25
ethnically 101:3,13 135:11
euan 90:11
european 100:23
events 20:25 21:9 22:8
eventually 28:18 156:11
everybody 54:2 105:8 118:9 145:11 175:7
evidence 149:8 149:23
exact 31:17 42:14 46:21 129:4
exactly 17:12 31:10 38:21 41:14 42:10,24 124:2 154:15 160:10
examination 5:5,6,7 9:5 170:13 171:12
examined 9:4 103:16
example 22:14 37:22 40:17 48:11 62:1 67:1 74:7 75:14 82:8 86:14 90:13 96:19 98:3,21 100:11,22 101:19 102:25 103:19 104:17 105:23 106:3,8 107:2 109:25 112:24 114:7 117:1,4 119:15 123:16 129:6 129:13,22 130:1 134:25 141:17,19 148:20 152:11 160:4 166:16
examples 16:5 104:3,8 119:2

Foresight EX1222
Foresight v Personalis
IPR2023-00317

119:7 160:20
excellent 138:19 163:15
excision 24:20
excluded 144:12
excuse 91:19
execute 73:19
exercising 31:15
exhibit 6:3,4,6 6:8,9,10,12,13 6:15,16,17 12:9,12 22:15 22:16,19 36:1 36:2 39:24,25 48:23 50:6,7,8 50:17,21,24 51:2 56:4,6,8,9 76:15,18 80:19 83:7,8 86:8 112:5 118:13 118:14 121:6 130:3,8,19,20 131:1 134:2,4 145:10 154:17 154:18 164:6
exhibits 11:23 13:11 14:15 24:24 25:2,4 25:13,16,19,20 72:10 108:12 108:12,18 109:6,8 117:6 129:21 145:7,8 149:7
exist 21:20 43:14
existed 26:16 61:22 65:8 86:21
existing 62:25
exome 58:1 71:8 74:24 94:16 101:25 102:3,5,16 111:9 120:10 126:3,5,9,9,22 126:24 127:4,6 127:11,11,13 127:15,17 131:13,15 132:25 133:2,3 133:3,5,24 148:2,3,6,8,10 148:11,15 149:1 150:1,9 150:16,16,24 151:3,7,9,19 155:10,12
exomes 132:4
expect 22:6 53:2 160:18
experience 28:14 34:16 35:1,14,18,21 78:11 81:7 90:10 92:19,20 93:1,4,5 108:21,23 148:18
experienced 149:14
experimental 121:15,17
experiments 123:1,22
expertise 15:18 75:11 78:10 79:14 81:6 82:1,5,10,11,12 82:13 135:17 135:20 136:11 154:9,10
experts 137:11
expire 32:1,4
explain 12:20 91:5
explained 10:23
explanation 17:2
explore 77:4
explored 77:4 161:6
extended 15:11 49:24 66:6 112:10
extensive 128:4 152:23 160:4
extensively 53:22 55:14 75:21
extent 15:18,23 21:21 26:5 42:8 52:2 53:20 54:20 70:3 147:10
externally 84:10

f

f 176:1
fact 18:8 19:16 20:24 25:10 34:12 44:19 46:12 69:7 81:24 84:18 108:8 141:13 163:17 172:4 174:1
factual 67:20
factually 67:25
fair 30:9,25 39:23 76:10 87:7 98:22 116:23 121:13 121:13 166:4 167:6
fairly 54:16
familiar 10:19 15:3 44:19 48:9,9 55:2 89:23 90:14,21 90:25 92:17
families 62:10
family 18:11 26:4 34:10,13 40:12 41:6,9 42:9 44:10 45:4 60:13,18

Foresight EX1222
Foresight v Personalis
IPR2023-00317

61:22 62:11 63:14,18 69:3 103:9 114:7 152:17
family's 35:3 35:22 40:13,20 46:11 48:14 60:3 61:23 63:3,6,9,20 64:2 103:3
far 51:18 65:23 167:18
father 62:4
favor 10:15
fda 138:16
feature 109:25
features 116:15
february 26:16 48:11 54:18 111:7 126:7 133:4 151:18 156:24
federal 31:6
feel 82:14 113:11 144:20 146:13 161:9
felt 29:1,2 62:12 63:12,18 72:21 82:7,9 96:18 126:23 144:15 156:21
field 15:18 31:3 35:2 69:13 84:9 85:18,21 107:15 108:11 109:8 136:14 137:8,11
figure 69:12
file 137:19 156:1 157:1 159:12
filed 7:17 10:8 46:19,19,19 109:21 137:19 153:19
filing 46:20 137:15 150:15 154:16 155:17 157:23,23 161:10 162:25
filings 35:7 156:6,22
fill 102:12 106:12 126:17 150:19 163:22
filled 163:24
finance 53:12
financed 117:16
financial 28:3 110:25
financially 8:3
financing 26:18
find 20:3 46:23 61:23 103:6 118:3
fine 11:4 54:4 68:2 72:12,14 130:25 159:4,5
finish 64:12 81:19 159:10
fired 24:9
firm 8:15
first 12:3,13 15:5 17:16 29:23 31:13 34:12 40:22 46:15 47:1 51:19 53:5 62:23 65:3 67:18 80:2 83:10 88:18 90:19 98:25 99:1,9 111:6 121:3 124:22 124:24 125:4 131:17 140:3,6 140:11 141:5 142:22 146:21 148:10 149:8,8 149:25 151:5 151:18 156:20 156:24,24 157:1,5 161:10 162:12 164:10 164:22,23 166:21
fit 38:11
five 47:3 73:5 78:16
fix 62:22
flip 51:4
floating 83:23
flop 51:7
flow 101:23 147:15 148:5 164:15 165:6,8 165:25 166:4,6
fluorescence 86:23 87:21
focus 25:7 26:6 39:6 56:7 57:7 162:9 166:14
focused 80:1 129:24 151:10 154:1,13 162:2 162:7
focusing 25:13 109:6
focussed 144:23
folds 93:21
folks 9:10 53:19
follow 33:18 150:10 157:17
followed 111:13 150:16
following 16:9 20:7 142:19
follows 9:4
foregoing 176:5,10,19
foresight 1:4 2:4 7:16 8:11 8:13 9:10 32:19,21 33:22

form 38:5 48:20 100:19 120:22 127:8 159:14,19 163:18,21,23
formalized 161:4,13
formalizing 156:5
formation 35:6
formed 30:12
forms 52:23 75:17
forte 76:11 83:4
forth 28:19 29:8 51:4 54:25 141:3 152:16 159:25 160:21
forward 30:5 32:14
foster 35:5
found 62:5 68:17 101:2 113:12 122:10 124:20
foundation 33:13 39:14 45:18 66:2 68:19 88:22 116:25 117:7 117:11,12,14 117:19,23 118:6 144:6 155:21 174:4 174:21
founded 16:1
founder 60:3
founders 83:5 135:16,18,22 136:18,19
founding 136:17
four 11:12 26:15 40:14 41:5,9,23,25 63:15 73:3,11 74:19 129:6 135:1 136:6
fourth 11:15 74:4
fragile 103:22 106:20
framing 13:8
free 146:13
frequently 54:16 56:7,14
friday 2:19 6:12 7:3 118:20 155:1
friends 28:15 67:10
front 9:16,21 150:23 153:18
fully 105:8 139:21
function 128:7
further 77:17 144:1 171:11 176:18
future 32:12 72:19,22 103:14,15
fuzzy 167:16

g

g 44:16
gaii 41:1
gap 106:9,13
gaps 45:2,6,9 45:10,11,16 46:1,5,13,17 102:12 126:17 150:19
gc 119:16,17,24 120:2,4,6,12,14 120:16 123:16 123:17,20 126:13 150:19
gene 95:2,5,12
general 10:20 10:21 12:8 13:6 14:6 27:5 35:16 39:6 58:3 62:8 71:3 74:10 128:18 156:4
generalize 98:14
generally 14:25 15:3 19:18 23:6,7 38:3 52:22 53:22 55:18 57:4 62:3 115:17 128:8 141:6 147:2,5 148:11 161:24 168:21 172:24,25
generate 61:12 66:8 67:17 107:10 120:24
generated 36:7 38:9 67:18 69:24 70:11
generation 28:15 62:11 69:8 96:20
generations 63:14 69:9
genes 126:13 126:19,21,23 127:12
genetic 43:8,13 49:8 57:22 62:6 86:17,21 96:21 102:14 104:16,20,22 106:18 113:1 116:15 119:21 141:12 151:2 152:11,15
genetically 76:8 103:25 133:14 152:10
genetics 6:17 40:6 63:4 67:2 101:13
genome 6:16 12:4 34:9,12

34:17 35:3,15 35:21 36:6,8 36:10,23 37:9 37:16,19 38:1 38:7,19 39:12 41:3,25 42:6 43:2,3,12,14,17 44:13,20 45:17 45:22,25 46:12 46:16 48:17 56:23,25 57:2 57:3,9,17,24 58:5,7,10 60:2 60:7,15 61:5 62:3,6 63:24 66:11 67:4 68:13 69:12,13 71:7 74:24 78:11,11 79:20 79:24 80:2 81:6,7 83:21 83:25 84:12 91:20 101:25 102:3,4,10,16 103:6,13,16 104:15,18 105:11 106:6,9 106:12 112:2,3 114:6,10,11 117:13 119:18 120:1,9 123:17 125:5 126:8 127:5,6,16 129:18 131:20 132:18 146:24 146:25 147:4,6 147:8,14,18,21 147:24 155:11 155:12 174:14 175:1

genomes 35:22 40:13,20 42:1 42:8 43:23 44:3 46:7,12 48:14 57:6 60:3,3,12 61:23 63:3,9 63:17,20,22 64:3 66:9,10 66:25 67:10,11 67:12 69:5,17 69:18,25 80:10 100:13,13 103:3 114:8 125:17

genomic 41:4 95:22 97:5,20 106:9 117:1

genomically 174:8

genomics 67:6 69:14 73:5,21 75:21 76:11,14 77:6,24 81:2 81:23 82:6,7 83:4

genotypes 86:16

genotyping 86:13,18,19 87:10,17 89:14 92:1

george 40:17

germ 149:2

getting 54:11 70:9 74:16 122:18

give 8:21 9:23 12:25 62:12 76:21 103:13 163:9,11

given 19:19 28:6 143:6 156:17 175:12 176:12

gleaned 21:6

go 7:13 16:16 19:8 24:10,11 37:2 42:25 49:22 51:2 55:4 57:9 64:25 65:16 73:20 77:17 86:2 96:6 98:25 138:19 138:24 145:21 159:16 164:3,4 165:1 170:7 173:10,10,14 173:15

goal 27:23 38:2 38:3 43:1,15 44:1,5 58:19

goes 166:4,5 167:14

going 7:6 14:11 16:6 30:5,8 34:1 40:24 46:25 47:10 49:5 57:9 58:14 68:1 69:25 78:17 80:19 89:19 91:11 94:23 105:24 107:21 123:10 138:7 138:17,19 156:18,20 157:11 160:17 163:1,2,4,6,7 170:8 172:21 172:22 173:14 173:15 175:10

gold 100:12

good 7:5 9:7,8 21:11 23:4,11 29:3 30:18 130:22

google 6:4 14:21,22 21:9 21:10,17 22:8 22:9,10,19

gosh 161:15

gotshal 2:19

gotten 27:12

government 37:14 125:12

graphic 54:1

great 25:6 146:22

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

group 6:4 12:1 12:3 22:20 37:14 40:10,11 42:19,21,21 48:24 49:1 66:24 69:9 103:22 107:4 113:8,22,25 130:9,12 132:14 141:20
group's 84:21
groups 69:1 92:16
gs 119:19
guess 15:8 19:9 73:4 89:21 170:25
guidance 108:24 110:9
guys 72:15

h

h 6:1 69:3
hand 8:20 51:3 60:9 100:11 105:1 134:16 134:24 135:21 137:2
handful 97:5
handle 156:14
handled 53:13
handling 142:7 142:8
hands 29:3
handy 145:5
happen 19:15 54:10 103:7 129:8 165:7 166:20
happened 10:10 161:10
happening 141:4
happens 172:19
happily 28:19 28:24
happy 146:15 164:3
harvard 40:16 40:18 42:22
haudenschild 76:24
hawaii 138:17
hayward 10:7
head 28:6 31:18 39:18 50:22
heading 97:25
health 111:1 117:1
healthy 133:12
hear 47:16 164:4
heard 44:12,14 57:11
heidi 40:18
heinrich 3:15 5:5,7 8:10,10 9:6,10 12:11 12:15 14:5,14 16:9,14,19,21 19:6 22:18 27:9,14,24 30:6 33:20 34:23 36:4 39:10,22 40:2 44:11,17,18 45:15 46:14 47:5,8,18 50:14 51:13,17 55:25 56:5 58:11 59:13 66:12,19 68:21 72:18 76:17,19 77:2 78:15,22 79:6,9 80:18 81:13 82:22 83:1,2 84:24 87:24 88:17 89:20 95:14 97:11,22 109:24 118:16 118:25 119:4,9 121:1 127:20 130:24 131:5 138:5,12 140:9 144:2,9 145:12 145:14 147:12 148:1 149:6,19 150:8 151:8 154:21 155:5,6 157:4,10,22 158:3,8,15 162:22 163:1,7 163:15,16 170:5 171:13 172:13 173:25 175:5,9
held 11:1 22:8 26:23 117:14
help 13:8,14 15:21 18:4 32:13 61:13 65:18 84:21 123:24 149:23
helped 13:5 35:5 63:6 93:6
helpful 35:23 49:8 82:2,4 88:5
hey 113:6 162:14
high 96:13 119:19 120:6 120:12,14 123:17 126:13 150:19
higher 119:24 120:11,11 123:18
highlight 116:13
highlighted 136:16
highlighting 115:25
history 30:9
hmm 54:9 132:10

Foresight EX1222
Foresight v Personalis
IPR2023-00317

hold 18:16 19:8 162:22 163:2
holdings 32:10
home 17:5 29:12
honest 72:4
hope 28:23
hoped 28:19
hostile 73:19
hour 171:15,19
hours 11:14,17 17:7,13,15
house 4:4 11:1 133:6
houses 29:17 29:18
how's 168:20
human 12:4 37:12,17,19 38:7,19,24 39:12 41:16 44:1,3,24 45:5 45:7,17,21 46:16 57:22 58:4 79:20,24 80:2 100:18 125:16 135:11
hundreds 172:23
hunt 18:19
huntington's 103:1,10,17,21 106:5,14,19
hybrid 48:13 83:20 85:12 89:16 91:15 93:25 94:2,7,8 94:10 95:4 96:3,16 102:8 147:6 151:1 168:22
hybridization 91:22
hybridize 83:25 84:8
hybridizing 93:17
hypothetical 27:21 38:20 45:19 84:15 87:8 88:3,23 97:10 109:11
hypothetically 123:12

i

idea 44:23 54:1 67:25 113:12 114:17 135:11 143:16,18 151:4 155:16
ideas 35:5 67:16 77:22 119:23 137:9 153:16,17 155:9,25 156:2
identification 12:12 22:16 36:2 39:25 50:7 56:4 76:18 118:14 130:20 134:4 142:4 154:18
identified 18:5 65:14 96:21 120:17 131:21 133:19
identifies 131:8
identify 13:15 43:8 61:21 62:13 80:11 86:21,24 99:4 104:19 105:15 105:16,24 121:11,15,18 121:20 122:3 122:23,23 128:2 132:22 133:14 140:8 141:9,10 169:6
identifying 13:10 43:5 106:9 122:2 133:17 141:19 148:23 151:4
identity 142:9
illumina 36:9 37:11 38:13,23 41:1 42:3,16 42:23 43:22 67:5,10 73:5 73:18 74:8 86:13 94:16 95:1,5,12 114:10 125:20 174:1
illumina's 43:1 43:15 73:24 94:7
illuminous 73:4
illustrate 79:16
imaging 87:22
impact 73:17
implement 90:5 100:8 109:2 112:21 147:22
implementati... 105:22 151:23
implemented 21:18 102:9 112:25 150:25 151:7
implications 55:23
implies 58:7 79:14 87:13
imply 81:9
implying 39:19 58:6
importance 143:1,6
important 10:13 15:7,13 23:9 33:24 34:1,3 50:1 65:6 73:15 75:2,5 116:14 126:20 156:21 174:16
improve 62:16 64:14 65:7,20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

improved 75:4
improving 63:10 64:13
inadequacies 48:15
include 45:9 48:8 58:3 105:4,5 116:18 126:22 131:25 132:1 147:23 155:19 170:24
included 29:10 37:23 38:8 48:18 57:23 60:3 72:23,24 76:7,7 88:20 94:6,7,8 108:6 112:5 116:12 116:25 117:1,2 126:10,19 127:17 131:18 135:5 144:15 147:14 148:5 153:2
includes 40:13 40:16 76:4 87:6 109:16,17 134:24 146:10
including 40:14 40:17 53:18 63:23 76:5 82:6,8 127:18 129:2 161:22 161:25
incomplete 27:20 38:20 45:18 84:15 87:8 88:3,22 97:10 109:11
incorporated 109:22
incorrect 19:12 168:18,19,20
incurred 28:1
independent 20:24 21:5 22:23 23:18
indicated 24:8 24:22
indicating 145:13
indication 82:20,21
indicative 62:9
individual 6:16 23:5,10 36:6 42:2 46:1 60:14,15 104:11,18 105:6 111:18 112:6,8 113:2 113:9,10 149:3
individual's 105:25 106:1
individually 96:11
individuals 41:6,23 57:6 57:22 60:18 69:4,25 105:16 113:18 115:10 152:7
informatic 106:22,25
information 13:2 43:20 57:22 60:19 67:15 128:3 141:13 157:9 158:5,7,10 163:14
informed 26:3 28:14
initial 29:6 40:19 79:19 132:1 148:12 154:16
initially 147:1
initiated 130:18
input 34:7 50:2 53:17 54:12 73:15
inquiring 157:12
inside 135:19
instance 15:5 162:12
institute 63:24 66:6,7 68:10 90:18 124:2
instruct 14:11 16:6 157:9 162:20
instruction 163:2,10
instructions 16:13
instrument 62:18 71:19 164:15 165:22 165:25 169:4
insurance 111:1
intellectual 35:6 134:14 135:6
intended 61:20 87:2
intending 57:5
intention 161:21
intentionally 85:11
interest 31:5 103:12 104:12 165:12,16
interested 8:3 91:20 97:4 98:7 104:13 105:13 120:15 176:20
interesting 115:18,23
interfere 97:18
interfering 95:25
interior 168:7

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

internal 90:9 140:1 159:14
internally 104:6 137:24
interpret 59:5
interpretation 40:12,19 125:7 128:19
introduced 80:14 94:18 126:6
invented 19:3 159:22
invention 18:24 19:3 61:13 64:24 144:16 144:17,21 159:13,14 163:18,22
inventor 143:6 143:22 144:4 144:13
inventors 130:15 142:21 144:12
inventorship 144:11
investigators 133:18
invitation 14:23 18:5
invitations 14:22 25:5,11
involve 99:13 140:18 147:2
involved 14:19 14:25 16:1 40:19 53:24 79:18 80:3,16 87:5 91:1 92:21 93:10 102:25 125:5 130:14 136:7 149:12 152:6 174:7
involves 113:1 174:2
involving 16:4 16:10
ion 73:6 74:3
ip 8:13 134:15 134:17,19,21 135:9,15,18,21 135:22 136:3 136:23 137:1,5 137:6,14,23 151:24 156:5 156:13 159:21
ipo 27:19,23
ipr 7:19 145:8
ipr2023-00224 1:4 2:4
ipr2023-00317 1:5 2:5
irell 3:11 8:10
irell.com 3:16 3:17
irrelevant 115:19
issuance 155:19
issue 124:13 134:21 157:22
issued 36:12 138:2
issues 16:5,11 16:11 28:20 35:9 56:8 66:23 77:3 110:23,23,24 136:10,15 141:12
items 136:12

j

j 6:6 50:11
january 6:8 54:18 118:20 154:16 155:18 156:25 157:6 159:6 162:19 163:19
japanese 133:23
job 1:25 64:5
john 1:13 2:16 5:4 6:13 7:15 9:1 29:6 114:9 134:8 141:21 142:2 161:15 175:12,14
joined 8:16
joining 149:13
jonathan 131:7
journal 40:5 112:2,19
judge 9:16,21
july 88:16 90:12 142:19
june 6:9 77:1 77:22 80:21,24 82:19
jury 9:17,21

k

k 119:7
kary 172:20
keep 21:16 47:3 51:3 122:15 142:6 171:17 171:22 172:2 173:11
keeping 21:11 142:10
kept 21:22 22:1 171:22
key 23:11 33:11 33:22 134:14 135:9
kind 13:14 24:1 33:19 51:3 77:5 78:4 124:2 129:6 130:6 135:19 143:18 152:19 160:2,21 161:1 173:2
kinds 58:2 138:17 174:6

kit 133:6
kits 140:16
knew 10:9 64:17 65:14 71:10 75:18,22 100:17 103:19 103:21,22 118:10 120:1 136:14 145:11
knobbe 3:21 8:15
knobbe.com 4:2
know 11:3 13:4 15:7,9,13,25 17:9 18:19,21 23:16 24:4 27:25 28:5 31:10 38:10 44:25 46:7,20 55:20 71:18 75:5 92:20,23 95:10 98:24 105:7 113:7 118:3,5 120:19 124:7 133:23 142:8,15 146:17 149:2 149:16 153:5,7 153:11 155:23 157:24 158:20 158:22,25 159:8,11 160:12,18 162:14 163:8 163:17,20,20 163:25 169:10 171:17,21 172:10
knowing 141:17
knowledge 76:14 108:3,3 108:14 109:21
knowledgeable 75:14 108:11 136:9 143:14
known 37:12 37:17,17 38:4 41:8,13,16 45:6,16 60:13 60:15 69:12 96:1 97:6 100:14 103:20 119:2,6,7,8 126:20 128:6,6 133:18
korean 63:24 66:10
krause 3:17

l

l 97:11 107:2,2
lab 83:12 125:20 139:4 140:1,4,7 141:4,5,6,25 142:7
labcorp 117:3
labeled 94:4 133:8
laboratories 79:22
laboratory 99:21,24 101:19 107:9 107:13 120:19 120:20 125:18 127:1 133:7 139:11,12,16 139:18,19,21 149:14
lack 82:21 110:25
lacks 39:14 88:22
laid 58:17 64:18 79:23 147:19
lane 164:14,14 165:25
language 33:15
large 58:7 74:4 96:2
larger 63:13
largest 45:11
lasted 11:14,16
lastly 63:16
late 63:9 94:17 103:11 117:15
launch 150:10 151:9 152:5 156:23
launched 80:12
launching 156:20
law 8:15
lawsuit 32:25 33:3,6,7,11,21 34:3,5
lay 159:3
layout 55:17
lead 15:15,16 16:5 58:20 70:23 125:8
leaders 137:8
leading 33:2,5
leads 106:19 123:14 132:19
learned 35:4
learning 124:5
lease 139:12
leave 30:20 47:6
led 13:9 28:8 35:5 64:18 65:15 80:6 119:14 124:8 153:23 155:17 155:19,24 157:2
left 30:21,22 134:16,24 137:2 173:4,5
legal 15:18,20 15:20 16:4,11 16:11 34:21,25 67:25 143:8 147:10 150:12 158:12 173:21

Foresight EX1222
Foresight v Personalis
IPR2023-00317

length 45:7 131:24 172:25
level 30:14 42:10,20 44:6 44:8 155:11
levels 108:2,23
leverage 100:8 133:25
leveraged 124:25 125:7 125:23 126:2
library 168:22 175:3
license 134:17 135:4 137:2
licensed 134:19 134:20,25 135:1,7 136:24
licenses 135:3
life 112:3,7
ligated 168:15
limit 128:21
limited 17:8 100:5 129:11
line 16:18 87:1 134:7 149:2 164:10,22,23
lise 74:3
list 15:6 22:7 37:13 73:3 80:1 99:10,15 99:21,24 100:9 104:2 106:21 117:6 134:16 140:25,25
listed 23:19 24:4,7 65:25 68:22 69:21 74:19 79:25 106:22 113:8 116:18 140:2,3
listing 101:22
lite 73:6
literally 15:12 84:10
literature 92:17 172:15 172:17
litigation 10:14
little 11:1 44:9 72:2 83:9
living 17:4 29:10
llp 2:20 3:11
lobstr 107:2
location 7:20 96:23
locations 96:3 131:22
loci 86:18 97:5 97:7,9,11,13,15 97:20
locus 103:17
long 11:10 16:22 17:10 24:11 26:14 32:15,15 46:18 54:7 55:1 117:25 131:18 172:3
longer 13:16 24:8 28:17 131:20
look 13:13 15:9 15:12 23:2 28:7 29:8 32:14 36:1 46:21,22,24 50:23 77:10,14 117:9 129:25 134:23 139:9 148:20,21
looked 18:8 22:7 25:6 29:18 41:24 49:10 56:2 62:11 103:4 129:5
looking 18:3 22:8 29:16 49:8 51:9 56:12 62:10 66:9 77:12 78:1,7 80:20 83:8 103:6 106:8 111:23 139:2,15 142:17 145:20 145:22 157:15 164:7,9 169:4
looks 50:24 51:15 118:18
los 3:14
losses 28:1
lot 23:1 29:2 72:21 96:12,20 118:11 136:14 152:24 154:4 159:21,22 160:15,20
lots 172:17
low 119:15
lower 123:20
luman 4:1 5:6 8:14,14 11:8 12:22 14:11 16:6,13,15 27:6,10,20 30:2 33:13 34:21 38:20 39:14 43:18 44:22 45:18 47:2 55:11 57:18 59:1 66:2,17 68:19 72:15 76:21 79:4,7 81:12 81:14,21 82:24 84:15 87:8 88:3,22 95:8 97:10 109:11 118:23 120:22 127:8 130:21 140:5 143:8 144:6 147:9,16 148:7 149:10 150:2,12 155:21 157:8 157:15,18

158:1,4,13 162:20,24 163:6,13 170:7 170:14 171:11 172:7 173:21 174:4,21 175:6
lunch 130:23 138:6,9 139:14

m

m 132:16,16
made 20:23 26:12 29:14 30:4 35:7 46:6 54:1 75:25 86:13 123:6 124:8 125:24 152:22
magnetic 84:7 84:9,23 85:5 85:18,21,21 91:18 94:5
magnetized 167:23,25 168:1
mail 6:6,8,9,10 6:12,13 50:10 50:15 51:9,15 76:20,23 118:19 131:2 134:6 154:25 155:7 156:17 157:7 159:7 161:15,19,23 162:11
mailing 131:7
mails 13:13,17
main 14:20 54:5 94:1 139:3
maintained 21:17
make 24:14 34:25 50:9 57:9 65:22,23 92:14 93:6,17 96:22 101:24 107:13,19 124:14,15 125:1 130:6 131:1 134:5 145:10 154:3 156:22 163:4 165:5 171:23 171:23 172:18 172:21 173:10 173:16,24 175:8
makes 85:2 171:1
making 20:18 74:11 115:22 174:2
management 29:3 34:6 53:4 53:6,10,15,18 53:23 55:16 110:22
manella 3:11 8:11
manges 2:19
march 48:25 54:17 143:2
mark 27:7 118:20 159:20 159:21 164:12 164:24 175:6
marked 12:12 22:16 36:2 39:25 50:7 56:4 76:18 118:14 130:20 134:4 154:18
market 31:4 73:3,14 74:21 75:2,7,24 94:11,14,22,25
marketed 150:10 151:9 152:5,8
marketing 80:6
markets 76:5,6 76:7
martens 3:21 8:15
match 149:9,25
matched 106:1
material 22:2 43:22 49:13 52:21,22 55:19 108:17 113:1 153:1,10 160:15,16,16 168:7
materials 160:11 172:11
matter 7:16 8:16 10:16,18 35:17 163:17
matters 15:20 15:25 29:16 53:21 129:4
mean 16:15 57:5 59:6 82:1 82:10,11,12 88:8 98:4 143:16 144:18 158:22 159:1
meaning 31:22 68:5 128:6
means 86:16 87:14 158:21 159:22
meant 156:12
mechanism 119:18 122:24
mechanisms 119:2,8,10,11 119:14 121:12 123:25 124:21
media 7:14
medical 28:20 73:1,2 75:18 128:6 136:8 141:14
medically 126:19
medicine 117:1 117:7,11,12,14

Foresight EX1222
Foresight v Personalis
IPR2023-00317

117:19,23 118:6 152:12
medium 120:4
meeting 6:4,11 11:15 18:2,7,9 18:11,15,17 19:15,19,20,22 20:1,8,12 21:1 22:20,24 23:7 23:15,17,20,23 24:1,1 51:1,11 51:24 52:4,15 53:3,5,15 54:14,17,21,22 54:24,25 55:1 55:9 57:13 63:21 64:7 66:4 70:25 76:1 77:22 82:19 90:12 91:10 131:4 142:19
meetings 11:8 11:10,12,13,19 13:23 15:11 17:9,24 21:21 21:22,24 22:7 23:1,3,5,8,10 24:5,7,10,11 52:10,12,19 53:2,7 54:16 55:20 58:16 76:2
melanoma 75:18
member 52:13
members 41:9 42:9 53:6,14 55:15 92:21 103:9
memory 22:3
mendel 135:2
mendelian 76:8 149:4
mental 132:19
mention 27:6
mentioned 11:20 23:22 25:4 66:10 69:1,11 77:6 102:2,3 124:9 142:22
merits 156:15
met 9:9
method 48:7 83:19 88:10 89:7 92:12 120:23 121:20 122:2 133:12
methods 71:21 89:12 90:9 95:21 107:12 107:13 115:7 116:18 121:11 122:22 125:6 126:2 127:1,2 127:2
michael 142:23
microphone 47:16
microphones 7:8
middle 60:5 66:1 69:8,10 83:11,15
mike 48:23 49:2 67:1 111:25 112:18 130:12,12 136:9 143:11 143:14,20 144:17,18
million 45:12 125:13
mind 16:12 77:9 98:19 139:25
minute 56:2 76:21 78:16 132:9 157:17 171:20
minutes 41:19 47:4 77:7 106:4 130:21
mischaracteri... 76:12
mischaracteri... 55:12 57:18 140:5 155:22 172:7
mischaracteri... 140:11
missing 120:25
mistake 19:13
mistakes 17:17 25:20 26:11
mit 117:14,15
mixed 83:23 169:10
mm 54:9 132:10
model 114:5
modern 63:12 67:9
modification 84:1
modifications 84:14
molecule 164:16 167:1 169:14,24 170:2 171:3 173:1,4,23 174:11,11
molecules 83:22,23,24 84:10 87:11,13 87:14,18,20 88:21 89:7 168:15 173:19 174:24
moment 9:9 49:16 50:1 56:12
monday 77:1
money 43:23
monica 3:7
monocytes 41:5

Foresight EX1222
Foresight v Personalis
IPR2023-00317

month 17:1,11 19:25 32:2 49:2 156:25
monthly 54:16
months 26:17 137:20,20 156:3,19
moore 4:5 8:16 11:9 14:6
moore's 14:9
morning 7:5 9:7,8 51:24 101:12 142:25
mother 62:5
motifs 98:1,21
motivated 23:25
motivation 79:24
move 30:23 63:16 82:22 93:7 145:19
moved 63:19
moyamoya 132:16
mrd 107:17,19 108:14,16 109:10
mullis 172:20
multiple 48:8 49:9 58:20,21 67:4 81:25 110:19 111:17 113:2,9,14,18 114:17,21 115:7,11 116:11 123:2 124:4 128:9 129:1,1,25 148:15,25,25 151:12,16 152:1,1,6,9 164:13 165:24
multiplex 96:5 164:13
multiplexing 165:24
mutated 104:12
mutation 86:21
mutations 62:8 132:17
mute 7:11

n

n 5:1 119:7,7
naini 3:4,8 8:13 8:13
nainipc.com 3:9
name 7:23 8:14 9:9 142:22 144:4
named 10:4 59:17 67:6 142:20 143:5 144:11 176:20 176:21
names 141:22
nanopore 73:6 73:25
nate 8:14 11:8
nate.luman 4:2
nathaniel 4:1
national 79:21
naturally 21:25
naviaux 36:18
ncbi 37:13,14 38:15
near 100:15
nearly 89:11
necessarily 21:12,13 22:3 23:14,22 42:24 43:6,13 46:8 68:9
need 11:2 13:2 15:21 17:21 24:14 51:3 96:8,15 103:14 117:20 122:12 149:4 157:17
needed 26:11
neoantigens 154:6
nerves 132:18
neurological 132:15 133:21
never 83:3,3 147:17
new 34:6 44:3 46:25 58:15 62:8 70:4,10 73:15 109:16 133:19 151:21 151:23 173:16
newer 45:20
news 131:8
nexgen 71:5 87:3,5
nice 17:6 138:17
nimblegen 94:8 94:20
nine 110:11,16 110:18
noncancer 78:10 81:5 127:19
nonclinical 42:20
nonobvious 49:22
nonresponsive 82:23
nonsequencing 88:12
noonish 130:22
normal 14:2 106:1 110:8,9 129:17 148:22 149:9,12,25 151:14 152:1
normally 114:7 126:17 127:13 127:16
nos 1:7 2:7
note 7:8 95:1
notice 17:17 25:19 163:12

Foresight EX1222
Foresight v Personalis
IPR2023-00317

noticing 8:9
november 6:13 134:9
nuclear 41:6
number 6:2,7 7:18 11:8 13:10,23 17:22 18:20 24:24 28:5 31:10,13 31:16,17,20 39:5 41:20 43:10,11 44:25 49:19 50:11 51:16 56:8 57:6 59:17,21 60:1 62:7 69:24 70:23 79:25 95:22 96:2 106:17 110:6,15 116:23 129:4 129:11 141:24 141:25 142:11 148:17 172:9
numbers 50:21 96:7
numerous 116:12

o

o 97:11 107:2,2 119:7 132:16 132:16 176:1
o0o 4:10 5:8 6:18 175:15
oath 8:1 9:12 9:15,20
oaths 176:3
object 147:9
objection 33:13 34:21 43:18 45:18 66:2 68:19 120:22 127:8 140:10 143:8 144:6 155:21 172:7 174:4
objections 8:4 147:16 148:7
obligation 113:11
obligations 136:20
observations 115:22
obtain 70:12
obtained 13:12
obviously 15:21 19:22 21:2 46:2 93:19 140:21 153:17 170:6
occurred 16:16
october 6:12 155:1,5 157:7 158:19 159:7 161:23 162:11
offered 94:2,3
office 1:1 2:1 7:18 159:12
officer 75:15
official 38:8
officially 36:12 36:14 161:11
oh 21:7 122:19 142:1,3
okay 12:16 20:22 21:3 25:12,15 30:5 34:11 36:9 37:2 40:4,8 47:4,6,10 56:9 56:12 57:10,12 59:15 68:2 77:12,16 78:14 78:17 83:9 86:2,4 88:18 98:17 109:7 116:8 138:5,7 138:21,24 139:3 142:17 142:18 146:15 146:21 148:2 149:21 150:9 153:5 162:22 163:15 164:7 164:23,24 165:7,10,19 166:14 167:8 170:7 171:14
old 28:9 95:20 103:5,7
once 10:2,16,17 10:25 18:8 49:4 64:2 112:3 114:8,19
ones 87:5 105:9
ongoing 112:2
onset 103:11
open 12:13
operating 52:6 139:21
opinion 44:7
opportunities 49:23 71:5
opportunity 48:17 49:21 62:15 79:8 163:10 176:12 176:16
opposed 114:24 173:10,15
optimistic 32:11
options 31:15 31:21,23,25 32:1,4
order 125:15
ordered 36:13 36:14
organization 60:18
organized 13:6
original 13:19 102:11 147:2 147:25 150:15 152:3 171:3 173:1,4,17,19 173:23 174:19 174:24

originally 93:13 148:11
outcome 8:3 176:21
outlined 65:15
outright 31:14
outside 44:22 82:6,13 126:12 126:20,22 147:11 149:10 150:2,13
outsourced 125:19
outstanding 31:21
overall 16:22 101:23 105:20
overcame 30:12
overview 56:16 56:19 138:25
own 20:24 21:4 31:7,14 53:6 55:18 73:23 80:21 95:11 144:5
owner 1:9 2:9 3:20
ownership 32:7
oxford 73:6,25

p

p 69:3 176:1
p.c. 3:4
p.m. 6:5 22:21 138:9,11
170:12 171:15 175:11,14
pacific 45:23
page 5:3 6:2 12:13 19:9,10 20:3 37:2,4 40:21 118:24 142:15 164:1,5 164:6,7,11,22 164:23 165:12
pages 1:15 51:8 160:19
paid 111:5,11 117:17
paired 107:13
pairs 37:5,6,10 43:16 44:21 46:17
panel 90:11 95:2,6,13 126:11
panels 58:2 155:10
paper 42:13 48:22 49:10,15 50:2 111:21,25 112:4,8 113:3 113:7 115:18 116:1 130:17 143:1
paragraph 17:20 18:6,13 18:14,18,20 19:7,10,12 20:6,7,10,15,23 22:5,6 24:13 24:17 40:22 131:11 132:3 132:13 142:13 142:17 164:8 164:19 166:10 166:11,12,13 167:19
paragraphs 156:8
paramagnetic 168:7
parameter 123:3
parameters 70:5 124:4
paren 37:5
parent 62:7 152:16
parenthesis 86:15
parents 28:15 152:14
parkway 2:20 7:21
part 11:18 15:9 15:9 24:3 28:13 30:3 31:5,13,19 32:5,6 35:3,22 43:2 53:5 61:7 61:17 67:12 68:16 69:4 70:15,17 75:10 83:20 84:25 85:2,6,7 89:17 101:23 103:12 122:21 123:23 125:20 137:4,6 149:25 151:6 168:13 169:14 169:24,25 170:1,2 174:14
participated 143:24
particular 11:6 16:11 19:4 22:24 40:25 43:4 52:4 53:25 54:1 61:20 63:23 80:7,12 83:20 86:21 94:1 102:21 104:13 105:24 112:8 114:4 120:21 132:12 135:10 150:18 175:1
particularly 21:8 149:3 154:5
parties 7:13 176:19
partly 66:7 118:6
parts 13:18,20 13:21,22,24 15:4 31:11 83:24 127:16 145:2 146:9

Foresight EX1222
Foresight v Personalis
IPR2023-00317

147:5
party 8:2 43:20 107:3
passage 42:25
past 89:21 145:3
patent 1:1,2,7,9 2:1,2,7,9 3:20 7:18 10:8,12 26:4 48:21 50:3 109:19,19 135:8,10 137:14,19 142:21 143:12 143:21 144:5 144:14 145:4,7 145:20 150:11 150:15 154:16 155:9,17 157:13,19,20 158:23 159:12 159:16,18 160:7,11,14,24 161:5,8,12,16 161:22,25 162:3,8,8,15,17 162:25 174:23 174:23
patented 159:23
patents 25:24 26:1,4,5,7,10 34:20 35:12 46:19 48:2,7,7 49:16,18 109:4 109:4,15,22 110:2 144:23 144:24 145:9 150:15,17,21 153:18,19 154:19 155:19 156:16 157:2 160:19 173:18 174:18
patient 32:16 129:15 141:18 148:21
patients 32:14 73:2 75:16 132:20,21,23 148:16
pay 68:7
paying 30:23 59:11
pcr 95:15,19,21 96:5,8,13,15,19 96:23 97:6,12 97:14,16,19 170:16,19,25 171:2,6,8 172:4,14,19 173:24 174:7,7 174:12,13,25
peer 49:4
pending 81:13
people 15:2 18:4 23:13,25 24:1,2,9 37:25 54:23 55:2,9 58:6 60:12 62:12 63:14,15 63:18,23 71:20 72:1,23 75:13 75:17 76:13 88:8 89:10 90:17 92:19 93:6 100:21,22 100:24,25 108:8,20,22 118:10 128:12 129:5 130:14 130:17 133:13 133:13,15,23 136:5 137:11 142:7 144:15 156:15 160:12 161:2
people's 69:17 141:22
percent 24:18 37:8,16 38:15 39:3,4,13 41:8 42:5,7,10 43:2 43:16 44:1
percentage 119:19 120:4
perfectly 97:6
perform 146:23 147:24
performance 91:25 93:24
performed 34:13 36:24 60:6 110:8 117:3 132:24 133:1 161:21
period 15:11 16:2,25 27:4 27:11 34:10,14 49:24 66:6 76:10 97:3 112:10
peripheral 41:5
person 11:15 13:20 24:4 44:10 52:12 69:8 104:11,16 105:6,9 107:15 112:6 121:22 122:14,17 123:2,11 128:15 141:15 141:25 142:5,9 151:3
person's 104:22 129:17 132:18
personal 34:8 34:16 35:14 63:24 66:10 107:17 108:14 108:16 109:2,5 109:10,16,23 110:1,12,13 112:25 113:1 153:14,16,24 154:3,5,12,14
personalis 1:8 2:8 6:11 7:17 8:16,17 10:22

13:16 14:7 15:25 17:24 26:14,25 27:1 27:2 28:1 29:22 30:8,10 31:7 32:12,18 32:21,25 33:10 33:18 34:5 40:15 55:8 56:17 57:16 61:9 68:11,15 68:23 74:22 76:11 79:14 81:5,10,25 82:3,4 93:8 96:25 108:22 111:3 112:11 112:16,20 113:4 117:8 124:24 130:9 130:13,15,18 131:3 137:25 139:4,10 140:1 140:4,7 144:10 146:23 147:15 149:8,11,13,24 153:13,15 154:13 162:17
personalis's 13:13 31:1 33:21 34:6 75:10 78:10 83:5
personalis.com 4:6
personalized 150:24
personally 36:11
persons 142:20
petitioner 1:6 2:6 3:3 7:16 8:11 9:2
ph.d. 4:1
pharmaceutical 111:11
pharmgkb 135:1
phones 7:11
phonetic 73:6 74:3
phrase 79:10 121:10
phrased 79:11
physical 52:14 71:15
physically 140:22
physician 36:13,14 75:16
pick 7:9
piece 85:3 135:6
pieces 48:19 159:15
pin 65:12
place 7:12 12:23 23:17 32:18 113:18 134:6 176:8
places 44:24 96:18 97:16 100:10 120:24 148:24
plan 57:20 58:15 59:6,22 92:11 108:6 125:13 137:22
planned 85:14 90:5,7 101:18 102:8
planning 58:19 93:16 105:22 107:4 108:25 139:11 141:3
plans 28:18 53:21 58:17 64:18,20 71:6 115:21 139:17 141:2
platform 41:2 58:19 59:23
played 34:17
please 7:8,11 8:5,19 43:19 50:6 76:17 81:21 134:12 134:13 154:17
plos 6:17 40:6 63:4 101:12
plus 71:7,8 74:24,25 102:3 102:3 127:5 131:13,16 132:25 133:3 133:24 146:24 146:25 147:8 147:14,18,21 147:24 148:2,3 148:11 150:24 155:12,13
point 18:18 28:11 33:16 44:4 47:9 77:8 77:18 93:23 94:3 95:13 114:11,24,24 117:21 118:21 119:3 139:22 140:7 161:4 162:16 163:21 168:9,24
pointed 29:7 63:4 101:11 109:9 167:19
points 15:20 49:9,11 79:17 111:18 112:7 112:10 113:2 113:10,18 114:18,21 115:3,5,7 128:22,24 129:1,6,12,15 129:25 148:15 149:1 151:16 152:2
policy 31:5
polymorphis... 105:25

Foresight EX1222
Foresight v Personalis
IPR2023-00317

populated 19:20
portion 15:8 38:7 58:8,9 131:6 169:5,5
portions 15:7 15:19 37:19 84:12 91:19 102:10 131:19
position 26:23 34:24 163:5,9
positions 41:8 41:13,15 43:7
possibilities 78:1
possibility 78:9 82:15 91:21 139:16
possible 38:2,4 46:10,11,15 61:25 62:2 71:1 93:20 102:2 103:5 156:13 164:13 175:8
potential 72:19 77:4,23 81:1,8 111:4 117:7 134:15 135:16 135:22 136:3 137:6,17
poured 108:11 109:8
powerful 112:23
practice 19:5 51:25 52:18,21 54:19 61:12,14 64:23 67:17,24 157:11,14 158:18,21 162:23,25
pratt 118:20 159:20 164:12 164:24
precancer 75:17
precise 72:6
precisely 65:13
preliminary 170:22
premiere 112:1
prep 62:19 89:18 168:22 173:3
preparation 10:22 12:6
prepare 11:6 17:10 51:23
prepared 17:3 22:6,11 55:18 118:2 159:12 160:6
preparing 22:1 25:22 144:24
preps 97:25 105:3,8
preread 52:1
present 8:7 12:18 75:6 153:3
presentation 6:15 20:6 50:16 53:9 54:4,13 55:8 56:11 59:10,15 59:20 64:21 75:8 76:3 110:12 113:14 113:19 116:12 121:3 129:23 143:3
presentations 52:16 53:7 75:23,25 104:5 111:24 116:11 152:22,23
presented 49:14 52:21 67:16
presenting 53:21 58:23 74:21
preservatives 140:19
presumably 18:4
pretty 23:9 30:18 92:20 152:23
prevented 28:21
preview 49:1,6
previously 92:18 139:14
price 31:22,24 32:2
primarily 40:11 74:10,13 74:14 133:22 162:2
primary 27:23 74:18
primer 95:21 174:12
primers 95:15 95:19 96:8,13 96:15,16 170:16,19 172:5,14
print 134:8
printed 52:11
prior 10:24 27:23 54:24 58:16 93:1 140:12 156:23 157:7 158:18 159:6 161:22 165:11 168:22
priorities 154:4
prioritize 34:2 99:5,9 111:4
private 7:9
privilege 163:2
privileged 12:23 14:13 16:7 157:8,21 158:5,6,11 162:20 163:14

Foresight EX1222
Foresight v Personalis
IPR2023-00317

probably 17:11 17:21 19:14 28:6 39:4 45:11 48:21 49:12 52:20 72:11 90:19 160:1
probe 84:4,25 85:2,7,8,13,20 85:24 86:10 89:24 90:3,7 92:13 167:23 167:25 168:2,4 169:25
probes 84:1,8 84:13,17 85:16 85:17 87:6 88:1,2,21 90:4 90:6 91:13,17 92:5 93:11 94:4 95:6,12 96:5 101:16,23 102:8,21 104:21 105:10 105:17 106:12 119:24 120:14 120:20 165:9 165:14 166:8 166:16,17,22 166:25 167:1 167:12,21,22 169:16,18,18 169:20 170:2
problem 99:20 101:20 106:6 114:13 122:19
problematic 98:1,3,4,4,6,9 98:11,14,21 102:18,22
problems 28:21 49:23 64:18 71:9 91:23 93:21 99:7 100:1,18 101:5 124:17 132:19
procedure 176:4
proceed 61:8
proceeding 8:5 11:23 32:17 134:22 149:23
proceedings 7:1 145:9
process 10:20 10:23 15:10 16:22 40:19 64:12 66:14,21 86:18 87:2 93:11 96:3 123:1,3,22,23 125:14 126:15 139:11 141:7 159:11,18,24 160:8,24,25 161:15 167:15 168:22 169:1 171:1,7 173:3
processed 169:8
processes 121:15 140:1
processing 142:1
product 43:25 58:15 67:18 70:19 71:14,14 71:17 72:2,5 72:11,13 91:7 91:11 92:11 93:7,17 109:5 109:16 110:9 110:13 112:25 116:4,5 124:22 124:24 125:4 125:23 126:2,6 126:16,25 129:11 130:5 131:9,12,13,16 131:25 133:3,9 133:25 146:24 146:25 147:18 148:3,6,8,17 150:1,9,23,25 151:18,22,23 152:3,4,5,25 154:1,2,12,13 156:18,21,24 156:25 160:8 160:16 162:3,4 162:7,9,10
products 58:21 70:24 71:1,6,8 71:11,24 74:23 74:25 80:13,17 90:24 102:2 103:24 109:14 110:15,18,19 110:25 111:1,4 111:5,14 125:2 125:3 154:4
professors 26:16 40:15 136:7,22
profitability 27:16,19
profitable 27:2 27:4,5,12
program 19:17 19:25 20:13 56:17 58:23 61:9 65:6 70:17,21,22 71:2,3 74:23 110:14 116:3,4 116:9,11,13,17 122:21 124:23 125:1,25 137:16,24
progressed 67:14
progressing 64:3
progression 60:2 61:4
progressively 64:23 153:15
prohibit 130:5
project 45:25 56:23 57:1,4,5

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

57:17 58:13,22 58:22,24 59:5 59:17,19,21,25 60:21,24,25 63:25 66:11 69:5 79:19 130:16,18 132:13,25 133:1,16
projects 59:10
promoted 33:10
promotional 43:22
proof 23:21 108:19 149:24
proper 16:14 16:18
properly 47:16 93:22
property 35:7 134:15 135:7 139:13
proponents 32:24 33:2,5
proposal 59:19 60:10,20 78:2
propose 59:16 61:8 89:1
proposed 56:23
proposing 69:23 91:15,24
proprietary 68:11 112:11 112:16,19
prospect 29:24
protect 162:4
proton 73:6 74:3
prototype 131:9,12,14,17 132:1,2 133:9
proud 30:14
provide 17:2 61:11 74:7 89:17 99:12 102:13 118:2 127:24 128:1,2 128:4,9,9,16,23
provided 19:24 20:5 47:24 52:11 58:2 72:23 73:22 116:5 118:8 125:22 127:21 127:22 128:11 128:14,20,25 149:7 162:13
providing 41:7 56:19 73:1
provisional 46:20 155:18 157:1,1,6,23 158:1,17 159:6 160:3 162:19 163:19
public 27:9,13 46:6
publication 11:25 12:1 40:10 48:25 49:5 63:3 101:11 112:18 130:14
publications 46:24 111:24 133:20
publish 89:10
published 40:5 42:13 48:23 64:17 101:10 112:1,18 115:13
pull 83:16,18 83:19,19,21 84:10,11 85:17 85:19 86:5,25 87:12,12,15,18 88:11,13,25 92:6 95:7 97:24 102:22 104:3,9,14,15 119:24 131:18 131:19 167:22 169:17
pulled 84:2 131:22 165:13 165:16,21 167:4 168:8
pulling 85:18 87:13 150:18
pullout 84:13 84:16,25 85:7 85:13,17 88:1 90:3,6 95:2,6 95:13 101:16 101:22 105:10
purchase 126:10
purchased 29:12 42:4
purported 146:1
purpose 88:19 91:24 95:5,20
purposes 87:10 160:7 161:25
pursuant 176:3
pursue 162:17
pursued 34:5
pursuing 18:24 18:25 19:4 34:1
push 27:15,18
put 25:10 47:16 88:18 113:11 141:23,24 157:22 174:10
putting 161:16

q

quality 100:14 128:2
quarter 33:12
quarterly 33:9 33:18
question 14:12 16:7 20:18,19 20:21 32:6 55:4 57:11 64:13 66:20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

77:16 81:13 82:23 85:9,11 98:18 110:16 112:14 147:9 149:17,18 153:9 157:15 158:4,6,13 167:7,16 170:22,24 174:5
questioning 16:18 171:14
questions 9:13 16:15 47:23 56:8 67:21 72:16 79:1,12 79:13 146:14 146:16 166:14 170:16 171:11 175:5
quite 10:2 24:6 24:10 44:3 46:18 48:10 52:7 73:23 75:22 90:14 96:1,13,17 121:10 128:4 129:24 131:21 136:9,11 137:7 154:3 164:4 166:24 174:6
quote 111:22

r

r 1:23 2:17,21 23:24 53:19,23 54:3 55:9 107:2,2 131:8 176:1,1,1,1,2 176:24
raise 8:20 11:25 29:23
raised 94:24
ran 90:22
random 141:24
rare 132:15 133:21
rate 31:5
rates 123:15
rather 114:14
raw 42:14,20 44:5 127:25 128:19
reaction 95:24 96:23 123:8,19
reactions 95:25 97:17,20
read 131:18,20 131:23 132:8 132:11 146:21 165:1,3 169:5 169:7 176:12
reading 49:15 107:16
reads 38:6,9 101:3 103:18 106:7 119:19 169:3
ready 52:2 134:8
reagents 62:18 74:11
real 121:18 148:17
realization 49:21
realize 54:7
realized 18:9 112:21 114:2 114:16
really 14:16 21:11 29:3 39:16 87:2 88:13 157:16 160:23 161:3 174:17
reanalysis 42:13
reason 9:23 74:15,19
reasonably 93:23
recall 10:17 16:4 18:10 21:9 23:1,7,14 23:22 31:17 38:25 41:14 42:10 51:18,20 52:4 53:8,13 53:17 55:17 75:9 76:3 93:8 118:7 129:3,9 133:22 145:10 146:3 150:4 153:1 154:15 159:17,19 161:14,18 163:23 172:16
recalled 14:21
receive 70:12 140:14,15,24 141:5,6,8
received 52:13 52:15 64:2 67:11 103:3 125:15 140:8
receiving 140:12 141:3 161:14
recent 33:9 58:18
recently 18:9 109:17 153:4 153:10
recess 47:12 78:19 138:9 170:10
recited 147:13 148:4
recollect 14:17
recollection 20:25 21:5 22:23,25 23:4 23:8,12,19 29:25 45:3 54:11 55:6 77:13,20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

record 7:6,13 8:8 47:11,13 72:16 78:18,20 82:17 138:8,10 170:7,9,11 175:11 176:11
recorded 7:14
recording 7:12
records 21:20 21:23 172:2
recurring 114:22
redirect 79:3 170:6
reduce 61:11 61:13 67:17
reduction 19:5 61:12 64:23 67:24 157:11 157:14 158:18 158:21 162:23 162:24
redwood 2:20 2:20 7:2,21,21
refer 21:25 26:8 28:3 45:24 56:1,13 68:25 71:17 72:5,7,10 85:23 86:9,11 87:25 100:14 111:25 122:13 141:10 142:6
reference 37:12 37:14,17,23 38:4,6,8,15 41:17 42:5 43:2,17 44:2 44:24 45:1,5,7 45:13 46:9 51:10 68:3 83:12,15 86:5 97:24 98:1 100:16,17,18 100:20 101:3,7 101:14 106:14 106:16 111:20 124:19 130:7 130:11 135:11 137:13,14 162:14
referenced 38:24 65:17,19 100:4 143:2 157:6 161:21
references 105:1 172:14
referred 41:18 58:1 60:12 61:16 70:20 71:23 85:16 88:9,12,25 135:12 136:4 139:6,8 151:19
referring 41:12 41:14 59:24 72:13 86:12 91:14 92:7 98:15 119:10 122:8 123:4 127:3,5 130:8
refers 41:22 57:25 83:19 100:12,16,16 127:11 130:8 167:11
reflected 32:14 137:1
reflection 155:10
refresh 77:13 77:20
region 98:9 102:23
regions 98:7 104:3,4,8,11,12 104:15 119:18 119:22,24 120:1,12 123:16,19 126:12,13,18 126:21,23 127:12 150:18
regulon 135:2
rehm 40:18
reimbursement 111:1
relate 15:20
related 8:2 23:6 29:15 75:17 76:6 115:24 117:13 135:9 135:10 152:10 152:18 155:9 155:12
relationship 168:3
relative 37:12
relatively 96:6 146:6
released 89:8 95:1,13 111:8 133:2,4 148:9 151:18 154:1
relevant 35:16 39:16 103:9 106:10 115:20 116:2 150:7 153:9
reliable 22:3 124:16
rely 56:6 156:21
relying 22:3 157:10,13 158:17
remember 14:22 15:6 16:24 17:12 21:12,13 50:21 52:7 75:25 92:18 94:18,19 95:10 117:9 130:2 145:7 152:21 161:12 170:15,18,21
remove 20:15
removed 19:14
repeat 30:5 103:20 114:9

Foresight EX1222
Foresight v Personalis
IPR2023-00317

114:14 165:2
repeatability 122:8,14 124:10
repeatable 124:16
repeatedly 142:25
repeating 20:17
repeats 98:10 98:11,12,14,20 102:17,22,25 103:22 106:18 107:6
report 6:16 36:7,9,12,17 37:2 41:24,25 43:1,10,15
reported 1:22 15:2 37:5,11 42:15 44:20 176:9
reporter 2:17 7:25 8:18,20 8:25 12:10 18:25 44:16 51:12 76:16 97:9 119:6 155:4 176:24
repositioned 80:8
represent 8:15 9:10
represented 38:13 102:11 119:20 126:14
representing 7:23
request 150:5
require 101:5 123:17 173:19 173:22 174:19
required 44:9 120:5
research 13:9 76:6 111:9 112:11,16 115:13,23 132:14
researchers 40:11,13,16
resequencing 80:10
reserve 31:6
respect 122:6
response 29:6 161:14
responses 161:18
responsive 82:24
rest 102:23 145:2
restrictive 156:10
restroom 47:7
result 74:23 101:8 102:12 124:8 142:2,3 171:4 173:2
resulted 14:10 119:11 162:18
results 33:18 36:15 40:22 42:12,23 121:22,24 122:10,11,18 124:12,25 125:8,22 133:21 168:14
retire 28:12,18 29:7
retired 26:21 28:16 30:1 31:1
retirement 28:20,23,24 29:10,24 30:24
retiring 28:13 29:5
return 71:22 128:12 138:21
reveal 12:23 43:19
revenue 114:22
review 11:18 11:22 12:5 21:14 25:2,16 25:18,23 26:10 49:4 144:23 146:13,15 153:2
reviewed 11:9 11:20 13:21,22 25:25 26:1,5 153:9
reviewing 17:16 146:17
revised 6:7 50:11 51:10,16
rich 6:12 76:3 133:11 155:1
richard 75:14 76:23
right 8:20 12:5 22:5,22 27:16 27:19,19 34:8 35:17 36:25 46:25 47:22 60:9 61:12 62:23 64:9 65:4,9,19 66:21 67:20 70:17,21 71:24 72:20 73:4,7 75:6 77:7 83:5 86:5 88:21 99:8,17 100:11 101:17,20,25 102:24 104:9 105:1 106:15 113:21 119:16 120:21 121:4,9 121:23 122:8,9 122:15,21 123:23 127:23 130:10 131:9

Foresight EX1222
Foresight v Personalis
IPR2023-00317

132:19 134:5 135:21 137:1 138:1 139:23 140:1,14,17 141:5,8 142:12 165:17,22 169:23 170:1 171:16 174:6
rna 93:11
roche 73:5,19
role 14:9 34:2 34:17
roman 131:7
room 47:7 139:13,14
rosario 7:25
rsus 31:15
run 30:15 123:7,8 124:6
running 118:7

s

s 107:2,2 176:1
salt 120:11
sample 37:1 62:19 69:9 86:22 89:18 97:25 105:2 106:2 122:10 124:3 127:18 127:22,25 128:10,20 129:18 140:13 140:13,15,18 140:19,22 141:3,5,6,14,15 141:19,20,24 141:25 142:3,5 142:6,10 147:2 147:25 148:12 148:13,23 149:2 151:1,5 151:10 165:13 165:17 169:6 169:11 173:3 173:20 174:19 174:24
samples 59:6 59:17,22 60:14 61:1 69:7 71:20 97:2 102:15 111:17 113:9 127:19 127:19 128:9 128:11,15,21 128:23 129:1,2 129:12,14 132:5 140:8,25 141:9,11 147:23 148:25 151:13,14,15 152:1,1,6,9,18 164:14 165:25 169:1
san 3:24 36:20
sanger 95:20 96:22,24 97:1
santa 3:7
sat 160:13
saw 42:6 43:10 49:6 53:25 54:2 62:15
saying 13:5 18:6 20:14 74:17 87:25 92:3 107:18 151:17 156:17
says 20:6,7 41:13 76:24 78:13 79:4 86:15 105:24 106:25 107:1 111:23 131:10 134:7 140:7,8 156:8 164:11 165:4
scale 112:2
scan 146:19
schedule 17:25
scheduled 18:3 18:16 49:6
scientific 12:1 53:1,19,21 55:15,22 112:19 115:18 115:23
scientists 55:9
scope 44:22 147:11 149:10 150:2,13
scratch 160:12
sealing 140:19
search 22:9
searching 13:17
second 17:5 19:8 29:12 31:19 41:22 78:8 79:2 99:17 100:4,5 100:15 117:9 126:1 131:11 145:16 151:5
secret 156:9,22
secrets 156:14 156:16
section 15:12 15:12 18:21,22 19:1 20:2 27:7 40:23 176:3
sections 16:10 17:22 26:8
see 19:11 20:1 20:3 26:11 36:17 41:10 53:11 54:3 57:25 60:5,10 103:12,13 104:25 106:24 111:20 121:22 122:20 123:13 129:23 133:14 137:17 138:19 139:9 140:6 143:15,25 155:14,15 156:7 160:19 164:24
seeing 32:14 50:2

Veritext Legal Solutions
Calendar-CA@veritext.com 866-299-5127

Foresight EX1222
Foresight v Personalis
IPR2023-00317

seem 122:11
seems 16:24
seen 28:14 49:1 54:23,24 145:2 162:12 170:22 172:14
sees 75:16
seizures 152:13
select 83:24 91:19
selection 173:3
selections 93:6
selectively 84:12 85:4 171:9 174:14
semi 105:2,4
seminal 111:25 113:7 116:1 129:24
send 71:20 140:16,18
sense 58:5 71:17 130:6 158:12
sensitive 7:9
sent 6:8,12 20:6 50:10 52:14 53:11 76:23 118:19 125:21 131:2 134:6 155:1
sentence 40:25 132:3 155:15
separate 46:3 122:24 131:23 135:6 141:23 149:5 160:23 174:10,16
separated 161:3 167:4
separately 96:14 97:18 119:25 120:7 131:19 148:20 150:18
separating 142:4
september 6:10 20:2,7,8 21:19 101:12 125:5 131:3
sequence 36:6 37:12,15,17,24 38:1,2,3,4,5,6,9 38:14,15,24 39:2 41:4,18 42:6 43:5,11 43:12,25 44:2 44:6,24 45:1,7 45:13 46:5,9 46:12,15 57:5 59:6,22 60:14 61:24 67:3 68:5 69:21 71:21 79:19 96:22,24 98:8 100:17,18 101:2,3,7 102:22 103:1,2 105:15 106:1 113:9 114:21 115:10 119:25 120:4,9,12 121:21 123:11 124:19 125:13 127:6,7,22,25 129:16 131:20 132:4,21 147:4 152:14 169:3,5 169:7 174:3
sequenced 12:3 35:3 43:24 45:4,25 46:12 48:14 59:18 61:2 63:9,22 67:4,11 68:4,6 68:15,23 69:4 69:14,18 70:1 70:1 80:9,11 93:9 114:8 120:3 122:9 123:2 124:3 165:17,22 166:18,22 168:15 169:12 169:15,19,20 169:22,23 170:3 171:9
sequencer 96:24 97:1 169:8 174:1
sequencers 103:25
sequences 100:21 101:14 102:10 135:12
sequencing 6:16 34:9,13 34:17 35:2,15 35:20,21 36:7 36:10,24 37:20 37:21 38:17 41:1 43:3 44:3 44:8 45:21 48:16 56:23,25 57:2,4,17,21,23 57:24 58:1,3,4 58:5,13,24 59:5,9,16,19,25 60:6,11,24,25 61:19,22 62:9 62:14,17,18,18 62:24,25 63:7 63:12,20 64:8 65:7,8 68:7,18 69:17 70:4,6 70:16 71:5,11 72:20,23 73:12 73:14,16,18,21 73:22 74:2,5,7 74:12,14,20,24 75:2,3,11 77:6 79:14,18,24 80:2,7,8,13,17 82:1 87:2,4,5 87:11,19,23 88:20 89:8,14 89:18 90:20 92:10,15 95:7 95:16,20 96:20

Foresight EX1222
Foresight v Personalis
IPR2023-00317

97:8 98:5,9,12 98:13,15,16,21 99:2,7,13,20 100:1 101:9,20 101:25 102:18 102:24 103:18 104:18 105:11 106:7 107:10 111:17 112:3,6 112:9 113:1,17 114:6,10,11,17 116:5 117:13 118:8 119:11 119:15 120:8 120:17 121:4,8 122:17,20,21 123:5,19 124:14,15,18 125:6,16,19 126:15,18 127:17 132:24 132:25 133:6 135:25 136:10 136:13,14,15 137:13 150:20 164:15 165:25 167:15 168:10 168:14 169:4 170:20 173:6 173:19,23 174:19,23 175:2

series 15:10 146:10 168:13

seriously 24:22

service 42:4 43:3 70:19 71:19 72:3,7 72:24 73:22 74:7 133:10

services 71:13 74:14

session 81:16 143:1 170:23

sessions 10:22

set 59:6,7 60:14 61:1 70:5,22 87:6 120:8,13 151:1,6 154:19 159:19

sets 68:13

settled 10:14

seven 79:25

several 48:9 146:8 150:14

shape 30:18

share 32:10 68:9

shared 54:5,20 54:21

shares 31:9,14 31:16

shelf 133:2

ship 71:15

shipping 140:25

shores 2:20 7:21,21

short 17:10 18:14 45:10 47:3 107:6 156:8

shorter 153:11 172:25

shorthand 2:17 176:24

show 46:9 54:1 122:5 137:5

showed 43:22 63:5

showing 19:2,3

shown 14:15 39:2

shows 60:17 63:2 77:25 135:19

sic 39:24 41:20 48:2 73:4

side 60:9 134:16 162:9

sign 176:16

signature 24:22 24:23 176:14 176:17

signed 14:4 24:21 139:12

significant 25:7 62:5 108:20 110:21

significantly 31:23

signing 25:3

similar 42:24 108:23

similarly 151:10

simple 129:13 146:6

simply 62:3 123:7

single 49:25 95:23 107:19 130:2,3 147:2 148:12 149:2 151:10 152:6

site 174:25

sitting 23:17 117:21

size 38:24 39:1 173:3

skilled 108:7,9 109:13 110:7

slash 73:5 155:10

slide 6:7,15 50:11 51:14,16 53:25 54:2,3 56:10,12,13,16 57:7 59:21,24 60:1,9,17,19,21 61:4,16 63:2 64:21,25,25 65:16,17,19 66:1 67:16 68:3,23 69:21 70:6 73:3 74:20 77:11,12

77:14 78:6,7 80:19,21,24 81:4 83:7,8 86:2,8 88:6 91:14 92:4 94:24,25 97:23 99:17 100:2 104:2,7,8,23 105:19,23 106:15 107:16 107:19 111:16 111:20,22,23 112:22 113:6 113:12,14,20 115:3,5,16 116:4,10,19 118:22 119:1 121:2,6 127:3 129:22 130:7 130:11 134:3 134:11,13,14 137:18 138:22 139:2 143:2
slides 6:6 50:11 50:18,25 51:23 52:1,2,19,24 53:12,18 54:20 54:23,24 55:13 55:18,19,21 59:20 60:11 76:24 77:4,10 77:14,19 82:18 82:18 113:14 113:16 115:8 116:12 133:11 134:8
slightly 42:17
slow 72:15
small 52:7 62:7 95:22 96:6 97:5 139:16
snapshot 127:22
snyder 67:1 111:21,25 113:3 130:12 136:9,20 142:23 143:5 143:11 144:12
snyder's 48:24 112:18 130:12 143:1
software 42:17 42:22 132:7
sold 111:9 125:4
sole 35:23
solemnity 9:20
solemnly 8:22
solid 87:7 88:2
solution 83:21 83:23 84:9,11 87:14,15,16 89:11,16 91:13 93:15,15,25 94:4 95:4 99:12,25 101:20 102:2 107:14 167:12 167:13,14
solutions 83:13 99:5,9,16,19 100:6,7 106:22 107:1
solve 101:4
solving 49:22
somatic 148:23 149:5
somebody 10:11 59:4 68:7 109:1 129:3 141:22 143:15 163:22 172:1
somewhat 42:16
son 138:17
sorry 8:24 27:17 33:4 36:3,5 40:3 50:23 59:11 66:16 85:10 113:23 139:7 153:6 157:16 158:20 164:3 164:18,23,25 171:18
sort 22:12 33:10 39:19 49:15 66:13 77:23 144:23
sought 67:17
sound 50:13 171:22
space 117:20 118:9 139:20
spark 143:16
speak 82:19
specialized 120:10
species 80:9
specific 15:6,7 23:3,7 26:6 29:9 33:15 54:10 55:6,17 55:21 58:22,23 59:6,17,22 61:1,13 70:4 86:17 100:8 101:6,14 104:8 104:16 105:6 105:14 106:25 112:4 115:2 123:23 129:9 130:16 133:13 135:11 161:21 174:8,8,25
specifically 14:21 37:13 68:15 69:19 77:8 80:13 86:15 89:16 92:7 95:19 98:15 101:13 103:4 104:21 105:9,18 111:21 112:6 120:13 129:2 131:19 137:14

152:21 158:14 161:24
specification 26:2,3 42:3 43:24 61:2
specifics 161:8
specify 43:6,7
specimens 132:20
speculate 28:6
speculation 27:20 43:18 95:8
spend 70:7
spending 43:23
spent 145:1
spotted 90:22
spread 16:25 128:15,16
spun 117:14
staff 13:13 55:16 81:25 82:15
stand 24:18
standard 38:12 69:9 100:12,14 102:4,5,15,16 124:3 125:5 126:9 133:1,5
standpoint 75:19 115:10 149:15,15
stands 106:17 126:7
stanford 26:15 40:13,14 42:21 48:24 66:24 67:2 130:17 132:14 134:17 134:19,25 135:5 136:6,21 136:22,23,24 137:2 144:4
stars 3:12
start 37:3 64:12 104:18 122:7 145:15 153:13 156:5 158:23
started 64:13 70:6 79:20 114:20 157:12 157:25 158:10 159:13 160:2 171:19
starting 35:2 63:9 77:11 79:19 118:19 160:12 164:18
state 2:18 8:5,7 20:10 24:19 30:2 37:4 47:2 47:25 113:6 132:6 155:7
stated 104:23
statement 20:23 30:4 83:6 171:23,24
statements 21:3,8 22:4 28:3
states 1:1 2:1 7:18 18:13,14 125:11
statistics 37:4 42:14
stay 87:20
stayed 26:20
step 33:24 62:23 92:15 99:2 105:12 121:3 122:24 123:11 140:3 140:12,12 146:1,1 165:6 165:11,20
stephen 4:5
stephen.moore 4:6
stepped 30:7
stepping 28:8
steps 88:20 140:15 146:10 146:22 147:13 148:4 150:10 150:17,22 166:19,20 168:13
steve 8:16 11:9
steve's 138:16
stick 85:3
sticky 85:3
stock 31:1,4,7 31:15,20,23 32:2,7
stood 126:3
strand 172:21 172:22
stream 114:22
streptavidin 84:6,6,23 85:4 85:4 91:17 94:5 168:3,5
stretch 30:8
strike 31:22 82:22
strs 107:5
structural 86:16,24 89:15 92:1
structure 13:4 98:12 103:20
stuck 87:20
studies 61:5,7 61:15
study 62:24
studying 61:22 61:23 99:3
stuff 159:22
subject 6:6,10 15:14 35:17 50:10 131:3 134:7 170:6
submitted 129:21 144:14 149:23 163:18

Foresight EX1222
Foresight v Personalis
IPR2023-00317

subscribe 176:13
subsequent 60:11 88:19 92:15 97:7 113:10 168:10
subsequently 87:19
subset 147:6,20
substance 14:25 23:2,11 23:12 25:8 55:14
substantial 76:13
substantially 31:1 32:3
successful 133:17
sued 10:7 32:21
sufficient 64:15 67:15 89:11
suggest 35:24
suite 3:6,13,23
summarizing 108:5
summary 13:1 37:4 52:25 107:25 108:4
summer 160:1
superficially 107:5
supplement 48:17 79:1 102:5,23 106:12 126:11 126:24 147:7
supplemented 137:11
support 87:7 88:2
supportive 63:19
sure 20:18 23:16,16 25:10 27:10 31:12 34:25 44:14 47:2 50:9 57:9 68:14,14 71:23 77:10 111:11 125:1 130:24 131:1 134:5 160:9 161:3 165:5 166:24 175:8
sureselect 84:19 85:15 88:14 89:17 90:6,11,18 91:16 92:8,13 92:25 93:12 94:21 101:16 102:9,21 126:11 165:9 166:16
surface 87:22 89:7 90:22 93:20
surprised 53:3
surprisingly 109:20
svs 86:16
swear 8:19,22
switch 46:25
sworn 9:3 32:9 176:6
synergies 77:5 77:23 81:1
synergy 81:8
synonymous 90:3
synthesize 173:16
synthesized 90:22 93:13 96:9,10,10
synthesizing 96:14
system 21:10 21:16,17 22:10 88:15 89:17 90:5,7 91:16 92:8,25 93:12
systems 80:4

t

t 6:1 44:16 107:2,2 176:1 176:1,1
tables 160:4,6 160:20
tail 174:12,13
take 7:12 9:16 9:20 16:22 22:14 24:22 36:1 39:1 47:1 77:10,14 78:15 79:2 108:13,20 110:11 117:24 132:9 138:5 143:25 163:5 165:8
taken 2:16 7:15 9:12 47:12 78:19 111:17 113:10 128:23 129:1 138:9 170:10 176:7
takeover 73:20
talk 12:2,8 17:23 18:21 29:4 34:8 60:2 60:24 81:16,17 83:9 87:17 111:21 112:5 137:5 138:16
talked 18:23 59:4 75:23 90:12 99:1 102:17,19 104:25 146:4 167:20
talking 50:9 58:8 73:9 80:15 87:1,4 87:12 88:6,14 88:25 89:12,21 90:15 91:9,10 104:7,24 117:15 139:17

Foresight EX1222
Foresight v Personalis
IPR2023-00317

165:11,19,20 165:24 166:10 166:11,12 169:17
talks 105:1,2 137:5
tandem 106:17 107:6
target 96:2 102:21 104:21 174:8,12
targeted 58:9 86:18 102:23 173:24
targets 95:22 95:23
team 23:24 29:3 45:22 52:19 53:4,6 53:10,15,18,23 53:23 55:16 92:18,19,21 93:2 107:21 110:23 112:1 131:9 135:16 135:23 136:4,6 136:17 149:11
teams 53:19
technical 14:24 23:10,12 53:2 53:21 55:15,22 91:23 104:6 107:21 108:2 110:23 160:20
technically 172:18
techniques 62:19,25 63:5
technological 15:24 42:20 108:2 114:24 115:6 116:18 162:5
technologically 46:10
technologies 32:13 37:20,21 39:8 45:21 57:3,21 58:9 62:16 63:1,12 64:9 65:8 68:18 73:13,14 73:16 75:2,3 89:6 90:15 91:1 94:2,11 112:22 113:8 115:2 120:18 153:22
technology 10:13 12:4 25:8 35:20 45:23 48:13,16 62:14 63:10 67:5,5 70:17 73:23 74:2,4 75:15 82:16 84:19,20,22 85:14,15 86:12 88:5,11,12 90:19,20 92:13 94:7,9,13,17,20 94:21 95:4 98:16 99:3 102:9 109:20 123:5 126:8
tell 8:22 15:10 23:17 32:9 85:25 124:13 146:16 156:11 163:1
tellis 6:6 50:10
telomere 45:24 45:24 46:23,23
temperature 120:11 123:8,9 123:14
temperatures 123:13,18
ten 10:9,24 13:14 14:23 23:15 28:11 29:1
tend 173:8
tended 26:6 72:4 161:2
tenure 27:1 28:2
term 32:15,15 44:12 57:4 58:6 61:12 89:23 90:2 91:3 127:14 166:24 170:24 171:7,10
terminology 59:4 72:1 167:2
terms 52:8 67:25 83:10 88:7 91:5,6,8 92:5 130:3 141:4 150:22 156:5,10 159:3 159:8
terrible 152:13
terrific 32:13
test 36:14 107:17,19 108:14
testified 9:4 10:16 142:25 144:22
testify 176:6
testifying 9:16 9:21 32:8
testimony 8:21 9:24 41:19 55:12 57:19 144:10 155:22 172:6,8 175:12 176:8,11
testing 73:1 75:24
tests 116:24 117:2
text 24:23
thakuria 40:17
thank 8:25 40:8 47:17 72:8

Foresight EX1222
Foresight v Personalis
IPR2023-00317

98:17 167:16
theirs 82:10
themes 55:3
thing 13:14 41:22 50:9 71:15 124:3 129:7,13 130:6 152:20 160:2 167:11 174:9 174:10,17 175:4
things 14:21,25 15:21,23 21:11 23:13 25:5 28:18,22,24,25 29:9 30:24 33:25 35:4 50:3 52:25 65:13 75:18 77:21 88:9 89:10 91:9 103:13 105:5 108:24 109:23 112:23 138:17 139:19 140:17 140:20 143:14 143:20,22,23 153:23 154:10 156:14 172:10 172:17 174:15
think 10:23 11:24 14:2,18 16:14 17:20,24 18:10,20 19:14 20:1,2,18 21:18 22:2 27:3,9 28:4 30:2,3 32:5,12 32:13 33:24 34:3,3 35:4,4 35:16 39:17 44:23 46:8,23 48:5 50:8 55:5 59:3 60:25 61:11 67:15 71:14 72:21 73:9 75:13,18 75:21 76:12,13 79:11,12 85:25 88:4,24 93:5 93:23 94:14 105:20 106:3 107:15,18 108:10,15,16 108:24 109:1,7 109:12 111:19 112:4 117:3 129:4,22 131:14 132:11 135:12 137:4 139:12 144:16 146:8,16 150:5 150:6 151:20 155:8 156:9,17 158:22 159:23 170:5 173:8,12 173:13 174:5 174:15
thinking 48:12 137:21 143:24 155:25 156:1,4 170:21
third 32:5 43:20 83:11,12 100:2,25 107:3 132:3 139:3
thorough 63:13 67:19 102:13 106:21
thought 28:11 33:8 39:20,20 45:10 50:3 61:18 114:5 115:20 116:1 116:22 117:25 143:23 164:18
thousand 69:5
thousands 95:19 96:4 172:23
thread 131:6
three 11:13 29:14 31:11 62:11 63:14 65:1 69:9 94:1 117:4 136:7 152:18
throw 77:22
tillis 6:10,12,14 53:12 76:23 131:2 134:6 155:1
time 7:6,11 8:5 12:3 15:1,11 16:2 17:3,7,10 17:10 19:4 23:25 27:11 29:8,17,21 30:7,11,22,25 34:10,14 36:19 37:18,21 38:13 38:25 39:9,17 42:3 45:4,8,13 46:11,18 47:11 47:14 49:9,11 49:24 52:3,5 52:11,15 54:3 54:4,7,15 58:24 63:7,8 63:21 64:6 66:6 68:1,24 69:13 73:19 76:10 78:18,21 80:2,15 81:22 84:17 90:1 92:23 95:12 96:2 97:3 98:16,22 99:7 99:16,25 102:18 104:1 107:16,24 110:21 111:17 112:7,10,10 113:2,10,18 114:14,18,21 115:3,4,7 116:6,16,20 117:24,25 118:3 120:18 121:8 123:3,23

Foresight EX1222
Foresight v Personalis
IPR2023-00317

125:18 127:22 128:15,17,22 128:24 129:1,6 129:9,11,15,25 130:22 131:14 136:23 137:18 138:8,11 139:10,20 145:1,16 148:15,25 151:16 152:2 154:2,20 156:5 170:9,12,22 171:18,21,22 175:11 176:7

timelines 115:11

times 17:8 21:12 24:7 67:4 123:2 124:4 129:19 145:3

title 56:16 61:4

titled 74:20 83:12 119:2 134:14 139:3

today 9:13,24 12:6,19 23:18 31:21,25 32:8 45:16 46:10 47:3 64:10 92:1 157:3 170:16 172:6

together 13:18 13:25 48:20,22 49:13,20 107:7 161:16 169:1,4 169:8,10

told 122:18

tomorrow 6:11 131:4

took 12:23 15:10,15,16 16:5 23:17 28:23 110:16 171:15

top 28:5 31:17 50:22 131:10 165:12,20

topic 58:16

total 11:12

towards 27:15

track 21:11 110:4 142:6,10 171:17,22

tracked 116:6

tracking 110:2

trade 156:9,14 156:15,22

trademark 1:1 2:1 7:18

trademarks 135:13

trading 31:1

transcribed 176:9

transcript 27:7 30:3 33:16 170:23 175:7

transcripts 33:19

transferred 36:15

travel 28:19

treated 175:3

trial 1:2 2:2

tried 170:19

trio 152:18

trips 29:14

true 31:3 37:18 97:15 98:23

trust 137:7

truth 8:22,22 8:23 32:9,9 176:6

truthful 9:24

truthfully 9:13

try 27:15,18 38:2 92:14 95:15,23 121:20 123:12 132:22

trying 16:24 35:24,25 39:17 62:22 67:22,25 73:19 85:10 87:18 91:4,5,6 99:20 101:2 112:15 122:14 137:4 152:14 154:3 167:13

tuesday 11:16

tumor 104:19 104:20,22 106:1 129:16 148:20,22 149:9,12,25 151:14,25

tumors 151:15

turn 22:14 39:23 40:21 50:6 56:1,10 76:15 78:6 83:7 94:23,24 111:22 118:13 118:22 121:6 130:19 134:2 134:11 142:13 154:17 164:1

turned 10:12 28:9 30:22 56:9

turning 139:16

tuttle 4:9 7:23

twice 121:22 122:10,14,17

two 11:14 12:18 17:12 29:15 69:1 71:1,6,6,11 94:15 96:15 97:5,7,17,19,20 99:19 102:2 103:7 104:25 106:20 109:4 115:8 125:2,3 137:20 147:3 157:2 166:19 174:6

Foresight EX1222
Foresight v Personalis
IPR2023-00317

type 85:24 86:9 90:7 97:1,2 175:1
types 23:1 30:16 65:11 102:7 127:18 134:19
typewriting 176:10
typical 126:22
typically 38:12 87:17 108:1 123:17 127:11 129:16 140:16 140:23 152:12 167:1 173:4

u

u.s. 1:7 2:7 31:6 37:13 79:21,21 125:12,13 159:12
ultimate 34:18 154:11
ultimately 10:14 34:4 121:21 125:13 131:24 133:16 138:2 155:19 157:2 162:18 163:19
under 31:22 79:20 97:25 99:9 100:12 124:9 137:2 140:3 176:9
underlay 162:5
underlined 64:20
underlying 32:6 122:23 123:25
underneath 97:23 140:7
understand 9:12,15,19 20:16 32:17 33:9 67:22,23 71:4 77:16 116:14 123:24 125:3 137:10 149:24 152:15 170:23
understanding 45:22 46:4 49:8 62:21 66:23 67:7 75:1 165:6
understood 44:4 72:8 92:2
undertakings 33:11,23
undertook 121:15
underway 66:13,21 161:17
unique 105:25
unit 7:14
united 1:1 2:1 7:18 125:11
university 36:19 40:14,16 66:25 132:14
unredacted 175:8
unusual 129:13 171:2
upcoming 111:24
update 6:4 19:24 20:5 22:20 74:22 75:7
updates 19:16 19:18 20:12 23:13
use 38:18,23 41:1 47:7 48:12 58:6 61:17 63:17 69:17 83:10 84:18 85:14,17 86:8 87:3,25 88:2 89:16,19 90:6,8 91:19 91:24 92:5,14 92:24,25 93:9 94:20 95:6,15 96:19,20 101:6 101:18 102:4,8 102:20 107:4 112:2 114:16 115:2,7 119:23 120:8,10 147:5 148:14,16,19 149:1 166:24 170:19 171:7 171:10
used 35:20 38:12,23 42:18 42:22,23 45:5 49:20 57:4 59:9 63:5,20 65:18 67:12 68:16 69:7,10 70:15 74:12 75:3 85:5,16 86:1,12,19,20 86:24 87:9 88:7,21 89:6 89:14 91:8 92:1 93:12,15 94:16 95:21 97:13 101:23 107:7,8 111:14 121:20 122:22 124:20 126:9 127:14,17 147:22 148:14 150:23 151:12 151:13 159:1 167:21 171:8
useful 92:3 114:3 115:9,10 115:15
uses 84:22 165:9
using 12:4 42:17 45:22 57:3,21 63:25

Foresight EX1222
Foresight v Personalis
IPR2023-00317

67:4 71:21 83:20 84:17 89:16 90:2,6 90:20 91:3,12 91:15,21 92:9 92:12 94:4 95:3,20 101:16 101:17 102:15 104:14 112:22 120:20 132:5 133:5 150:19 151:5 165:13 168:24 174:1 174:13
usually 58:6 59:5 129:19 167:11

v

va 125:22
vacation 18:11 29:17
vaccines 154:6
validation 96:19 97:1,2
valley 3:22
valuable 114:17 116:16
value 32:1,4
variability 42:2
variable 106:17
variance 148:23 149:5
variant 89:15 92:1 96:21 106:18 128:4,5 128:5 133:10 133:17
variants 43:8 43:14 62:6 80:11 86:16,17 86:25 104:16 104:20,22 119:21 121:18 121:18 128:2,3 132:22 133:19 151:2,4 152:15 152:15
variety 98:6 111:3 127:18
various 13:24 58:2 145:3
vary 30:16 124:6
varying 108:2 123:3
venter 60:15 69:11,12
veramed 135:2
verify 172:1,1
veritext 7:24,25
version 45:4 58:18 148:10 148:10 151:20 152:3,3,3
versions 151:21
versus 7:17 133:13 148:22 151:25 156:16
vesting 31:15
veterans 125:12,14
video 7:12,14
videographer 4:8 7:5,24 8:18 47:10,13 78:17 78:20 138:7,10 170:8,11 175:10
videotaped 1:12 2:16
view 38:16 103:14
viewed 48:16 71:4
visible 116:15 116:16
vntr 103:21 106:23,25
vntrs 106:17 107:6
vp 53:12
vs 1:7 2:7

w

w 119:7
waived 176:17
walk 117:24
want 11:25 20:4,20 39:18 47:15,22 50:22 59:11 61:1 77:8 79:11 82:17 83:24 98:25 99:5 117:10 118:23 119:3 123:10 129:16 134:2 141:16 144:3 156:18 163:4,8 163:9,11 164:1 164:4 165:5 171:23 174:2 175:7
wanted 25:6 28:22 29:9,19 30:24 62:20 63:11 70:3 77:18 79:16 92:24 96:2,5 96:12,22 97:19 124:14 134:11 147:7 161:7
wanting 30:23
washed 166:8 166:17
water 31:22
way 29:6 37:11 38:22 46:10 61:18 63:25 72:16 75:5 79:10 82:20 85:9 102:20 114:6,12 121:10 122:5 123:21 132:2 132:19 145:19 150:25 152:1 176:20
ways 49:22 78:3 98:7

Foresight EX1222
Foresight v Personalis
IPR2023-00317

144:19
we've 22:1 24:11 29:11 126:14 129:22 162:12
webster's 91:4
wednesday 20:8
week 11:13,15
weekly 6:4 22:20
weeks 32:3
weighing 156:17
weil 2:19
welcome 138:13
went 24:7 29:17 36:21 127:10 131:15 146:4,12 153:16
west 1:13 2:16 5:4 6:6,14 7:15 9:1,7 15:8 16:16 50:11 78:23 114:9 134:8 138:13 141:21 142:2 170:15 175:12 175:14
whispering 7:9
wide 35:21 127:18
widely 69:7
wife 17:5 29:12 29:18
wilshire 3:5
wired 132:19
withdraw 163:10
witness 5:3 8:19,24 9:2 12:13,22,25 14:11 16:6 19:1 22:17 27:11,22 33:14 36:3 38:21 39:15 40:1 43:21 44:23 45:20 47:6,15 50:8 51:14 55:13 57:20 59:2 66:3,17 68:20 76:22 79:4,9,10 81:12,15,22 84:16 87:9 88:4,24 95:9 97:12 109:12 118:15 119:1,7 120:23 127:9 130:25 134:5 140:6 143:10 144:8 147:17 148:8 149:11 150:4,14 154:19 155:23 157:16 172:9 173:22 174:5 174:22 176:5,8 176:12,14,15
won 125:15
wonder 89:21
wondering 85:8 149:22
word 85:25 87:12 92:6 137:17 160:24 167:9
words 158:25
work 28:17 64:7,16 89:9 90:2 97:14,16 101:23 111:7 113:4 122:6 130:9,11 133:4 137:12 143:7 143:10 147:14 148:5 149:12 153:25 157:5 157:12,19,20 157:23,24 158:1,16 159:5 160:21 161:20 161:24 165:6,8
worked 12:21 13:25 36:13 40:12 49:2 67:7 75:20 89:10 90:16,16 95:18 103:23 136:12,13 151:25 154:8
working 13:12 23:13 65:11 110:17,18 132:15 153:13 161:2
world's 137:8
worry 103:14
write 12:16 15:4,8 160:13 162:15
writing 13:20 159:13,16
written 19:21
wrong 122:1,1 122:12
wrote 13:22 15:1,2 16:10 146:3

x

x 5:1 6:1 103:22 106:20
xerox 173:10 173:11

y

y 132:16,16
yeah 36:5,23 47:5 51:6,6 77:18 149:20 163:13 164:24 167:8,8,8,10,10 167:10
year 17:25 26:21 52:6 54:18,18,19

Foresight EX1222
Foresight v Personalis
IPR2023-00317

76:4 94:15
107:22
years 10:2,9,12
10:25 13:14
14:23 22:1
23:15 28:9,11
29:1 30:1 35:1
46:18 90:23
103:5,7 109:22
110:11,15,17
110:18 111:13
136:14 151:21
152:4 153:17
159:23
yep 65:5
118:17 139:1
young 29:7
younger 103:8

z

zoom 11:13

DocuSign Envelope ID: 79BB59BA-20E1-4F0F-9502-E31D4D473D4C

ERRATA SHEET

Case Name: *Foresight Diagnostics Inc. v. Personalis, Inc.*
Date: December 8, 2023
Deponent: John West

Page(s)	Line(s)	Change	Reason
44	12	"DEGAPed" to "degapped"	Misspelling
44	17	"DEGAPed" to "degapped"	Misspelling
49	8	"helpful or understanding" to "helpful for understanding"	Incorrect transcription
71	5	"nexgen" to "nextgen"	Misspelling
73	6	"Lite Ion Proton" to "Life Ion Proton"	Misspelling
74	3	"Lise Ion Proton" to "Life Ion Proton"	Misspelling
84	21	"Celexa" to "Solexa"	Misspelling
87	3	"nexgen" to "nextgen"	Misspelling
87	5	"nexgen" to "nextgen"	Misspelling
90	16	"Celexa" to "Solexa"	Misspelling

Dated: 12/20/2023

DocuSigned by:
John West
John West 7DDBCBB417B490...

Foresight EX1222
Foresight v Personalis
IPR2023-00317