IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

HERON THERAPEUTICS, INC., Plaintiff,	:	
	:	Civil Action No.:
v.	:	
	:	22-cv-00985-WCB
FRESENIUS KABI USA, LLC, Defendant.	:	

FINDINGS OF FACTS AND CONCLUSIONS

BEFORE JUDGE WILLIAM CURTIS BRYSON

Conducted Remotely

Thursday, August 29, 2024

10:00 a.m.

Reported by: Matthew Goldstein, RMR, CRR

DIGITAL EVIDENCE GROUP

1730 M Street, NW, Suite 812

Washington, D.C. 20036

(202) 232-0646

Azurity Ex. 1033
PGR Petition – USP 12,115,255

A P P E A R A N C E S

ON BEHALF OF THE PLAINTIFF, HERON THERAPEUTICS, INC.:

ISAAC S. ASHKENAZI, ESQUIRE
MARK RUSSELL SPERLING, ESQUIRE
JUSTIN T. FLEISCHACKER, ESQUIRE
CHRISTOPHER HILL, ESQUIRE
STEPHEN KRUSE, ESQUIRE
PAUL HASTINGS LLP
200 Park Avenue
New York, New York 10166
212.230.7892

and

KARTHIK R. KASARANENI, ESQUIRE
2050 M Street, NW
Washington, D.C. 20036
202.551.1901

and

A P P E A R A N C E S C O N T I N U E D

JEREMY A. TIGAN, ESQUIRE
MORRIS NICHOLS ARSHT & TUNNELL
1201 North Market Street
16th Floor
Wilmington, Delaware, 19899
302.425.3096

ON BEHALF OF THE DEFENDANT, FRESENIUS KABI USA, LLC:
IMRON ALY, ESQUIRE
KEVIN NELSON, ESQUIRE
HELEN H. JI, ESQUIRE
JULIE A. VERNON, ESQUIRE
ARENT FOX SCHIFF
233 South Wacker Drive
Suite 7100
Chicago, Illinois 60606
312.258.5523

and

A P P E A R A N C E S C O N T I N U E D

DANIEL A. TAYLOR, ESQUIRE
SMITH KATZENSTEIN JENKINS, LLP
1000 West Street
Suite 1501
Wilmington, Delaware 19801
302.504.1688

JUDGE BRYSON: This is closing arguments in Case No. 22-985, Heron Therapeutics, Inc., against Fresenius Kabi USA, LLC, District of Delaware.

Before we get started, just two quick notes.

First, I think I asked the parties to provide redactions to the transcript that they wish to have implemented, and I think those redactions are due fairly soon so that we can have the transcript prepared for -- for posting.

The second point is there is a member of the public who has asked permission to participate, not to participate formally but to be present for this hearing; and given that the hearing is in the nature of the public court hearing, the -- well, we have some more people. Let me just make sure they're in there.

The -- I want to be sure that if anybody gets into an area in which they think that anything they have to say is something that is sensitive, confidential, and was not -- and did not come out in the first portion of the court proceeding that was public, then they should so advise me, and we can ask the members or member of

the public to excuse themselves.

I think that's the most efficient way to handle that matter. But be aware that this is all subject to public awareness.

Anyway, all right, let's get started.

I think each side has been allotted an hour. You can divide the side -- the time. We'll start with Fresenius.

But before we get started, I would like to call the roll of who's representing each side.

So, first, for the plaintiff.

MR. TIGAN: Yes, Your Honor. Good morning. This is Jeremy Tigan with Morris Nichols in Wilmington for Heron.

On my screen I see Mr. Ashkenazi, who will be arguing for us, and at least Mr. --

JUDGE BRYSON: Mr. Tigan, just a second. I just realized that this isn't yet on record. So let me --

MR. TIGAN: Oh, sure.

JUDGE BRYSON: Let me do that. I'll fix that.

There we go. All right.

So would you start again, Mr. Tigan, sorry.

MR. TIGAN: Certainly, not a problem, Your Honor.

Jeremy Tigan with Morris Nichols in Wilmington for Heron. I am joined by several of my colleagues from Paul Hastings, including Isaac Ashkenazi, who will be arguing for us.

I see many boxes on screen, influencing Mr. Fleischacker, and maybe Mr. Ashkenazi can tell me if any other Paul Hastings attorneys are on.

MR. ASHKENAZI: Your Honor, we have a number of other Paul Hastings attorneys on, but I'm the only one who will be speaking today.

JUDGE BRYSON: Okay. Do you want to run down the roll of who's on your list --

MR. ASHKENAZI: Sure.

JUDGE BRYSON: -- that are present?

MR. ASHKENAZI: Mr. Kasaraneni, Karthik Kasaraneni, Chris Hill, Justin Fleischacker, Mark Russell Sperling, and Stephen Kruse.

JUDGE BRYSON: All right. Okay. And that's everybody from your side.

And you will be handling the argument entirely, Mr. Ashkenazi?

MR. ASHKENAZI: Yes, Your Honor.

JUDGE BRYSON: All right.

Okay. For the defendant then, who do we have?

MR. TAYLOR: Good morning, Your Honor. This is Daniel Taylor from Smith Katzenstein & Jenkins for Fresenius Kabi.

And on the call I have with me the co-counsel from ArentFox Schiff, Imron Aly, who I believe will be leading the presentation, Kevin Nelson, Helen Ji, and Julie Vernon.

JUDGE BRYSON: Okay. And you're saying Mr. Aly will be leading the presentation. He'll be conducting the entire presentation for Fresenius, I take it?

Is that correct, Mr. Taylor?

MR. ALY: That's correct, Your Honor.

JUDGE BRYSON: Hello, Mr. Aly. You'll be doing the whole thing?

MR. ALY: Yes, good morning. Yes.

JUDGE BRYSON: Very good. Good morning.

Okay. Why don't we do this. Since Fresenius is the party that -- with respect at least to the issue of invalidity, is the party that is seeking to invalidate the patent, let's start with the defendant here.

So, Mr. Aly, I will try to restrain

myself from asking too many questions and give you an opportunity to make your presentation, I hope, largely uninterrupted. I may not be able to resist interposing a question, but I'll try to give you free reign to present the case the way you'd like.

If you want to save time for rebuttal, then you may do so. I will let you know when you get down to a short number of minutes.

So go ahead.

MR. ALY: Thank you very much, Your Honor.

A clarification, which is -- I believe the order had 45 minutes per side. So as I plan and reserve --

JUDGE BRYSON: Oh, 45. Okay. Yeah, I had forgotten. I had several hearings this week and I was not sure, but 45, then, it is.

MR. ALY: Well, you know us, we'll take the time allotted.

JUDGE BRYSON: All right. Well --

MR. ALY: No, 45 minutes is perfectly fine, and we're ready to proceed.

JUDGE BRYSON: Great.

MR. ALY: Thank you.

Thank you very much, Your Honor. And may it please the Court.

First, we really appreciate, and on behalf of all the sides in the case and the counsel, thank you for Your Honor's schedule and accommodation of us during the trial in D.C. and here for the closing. The convenience of the remote is valuable and having the court reporter do a gentleman's effort and Mr. Albano helping throughout the process has been very, very useful.

And in this particular case, our position is the patents are invalid as obvious. CN '845 showed obviousness for all the asserted claims. CN '845 did all the heavy lifting, and a POSA would have refined from there with nothing more than routine optimization.

Now, Heron's position results on hindsight. That's what their focus is going to be, and that's common for a patent owner. But here, our position is that it would take hindsight to ignore CN '845 and look some other way.

This is not a case where emulsifier is in one reference, oil is in another, the drug is in some third reference, there's a co-emulsifier pulled from an encyclopedia. No. This was

preassembled in CN '845.

So in my presentation today, I plan to discuss CN '845, motivation to combine, reasonable expectation of success, and secondary considerations, all to show obviousness of all five asserted claims. And I plan to conclude with written description and noninfringement.

CN '845, why is that so important? That's JTX71. It's because CN '845 solved a problem which had not yet been solved, and that problem was: How do we put aprepitant itself in an injectable solution?

And up until that point, there wasn't an aprepitant solution. And we looked, and heard at trial, Dr. Hale talking about efforts from the mid-1990s to design compounds and what they tried to do at Merck at the design compound level.

Well, we don't have a lot of evidence on formulation, even from the mid-1990s, but the point for this trial was that the priority date by that point in time, the world changed.

CN '845 issued in 2012. The priority date for the asserted claims is September 2014. And in that window of time, Heron did the routine optimization and obtained the patents that it is

asserting here.

The CN '845 reference, what did it show? It showed an emulsion as the way to obtain the injectable solution of aprepitant. It showed several ways of making the emulsion, not just one. It showed several different components that could be used within each of the categories. They all worked to make an emulsion.

And it showed different ranges for excipient amounts, and they also all made an emulsion. It's undisputed that they were all emulsions in the eight examples.

So now, a POSA, who had heretofore thought that aprepitant was hard to formulate -- cement dust, brick dust, those are the kinds of phrases that are used. CN '845 showed we can use the emulsion approach to formulate an injectable aprepitant solution. It was done. And the question remained: How stable could it be made?

Once it's done, now we're talking about how long can we keep it in an emulsion. And that's why there is a routine optimization, looking at CN '845, whether the question at the state of the art is making an NK-1 antagonist formulation in general or an aprepitant approach

in particular, the question is: Why would anyone look anywhere other than CN '845, once that is in the state of the art and a POSA was deemed to know about it?

What would the POSA do next? The evidence showed, and Dr. Rabinow explained, the motivation would be to combine that CN '845 with other knowledge, with other information that would explain to a POSA that a POSA would understand from which why that CN '845 emulsion was working and then to optimize based on USP standards, USP 1 and USP 729.

There's no dispute in this case that the USP is important, that a POSA would have pursued it for stability. All of the experts and both of the named inventors said that a POSA would look at the USP.

And that's what sets forth the physical stability claim limitations, and they're entirely consistent with the term "physically stable," as used in Claims 9 and 10 of the '794 patent.

The reasons to --

JUDGE BRYSON: Now, let me interrupt for just a moment, Mr. Aly.

Fresenius argues that, in fact, CN '845

was not stable. And so if you would address that question.

MR. ALY: Yes, Your Honor.

Fresenius' position is that CN '845 has some stability information in it, but it is not showing USP stability. So the thing to be done is to test for USP stability and optimize for that parameter. What I mean by some --

JUDGE BRYSON: So your -- your response to their argument is that the substance with the composition in CN '845 was stable at least under the standard that was being assessed in CN '845, but not necessarily USP?

MR. ALY: Yes, Your Honor.

JUDGE BRYSON: All right.

MR. ALY: That's right.

JUDGE BRYSON: So is the standard -- was it K subE that the Chinese patent was -- or publication was directed to?

MR. ALY: Yes, Your Honor, it was. And to be more precise, CN '845 was the patent application that had the -- it didn't have the K subE or other stability testing. It did still have positive stability information in the form of sterilization tests that had been done, heating

the product to a high temperature, and showing an emulsion will remain. That is not KE or USP.

JUDGE BRYSON: When did the K subE standard come in? Was that in Zhou?

MR. ALY: That was in the Zhou article later in --

JUDGE BRYSON: Oh, okay.

MR. ALY: -- later in 2012.

JUDGE BRYSON: Not in '845 patent?

MR. ALY: Correct.

JUDGE BRYSON: Okay.

MR. ALY: And Zhou, though, the same lead inventor in Zhou, that's JTX115, did the stability study and, yes, did look at several more variables over time and temperature conditions and showed that it maintained that K subE measurement.

But, again, this is more helpful, favorable information in the right direction, giving optimism and a reasonable expectation of success. It's not quite still USP standards. And that's why everybody would have now said, as Dr. Rabinow explained, a POSA would have next pursued USP optimization. That's the thing that had not been done yet, and that's the thing that would have been entirely obvious.

When doing the routine optimization, taking that K subE standard -- and this is where in the Heron submissions that had been made to date, they mix and match, sometimes saying, Well, if KE was already there, why would somebody need to do something more, and using the word "stability-oriented information."

And that's correct, it is stability-oriented information, but not the USP that everybody had agreed at trial would be the next step to pursue.

When pursuing K subE, what -- and going from K subE to the USP 1 and USP 729 standard, what would a POSA focus upon? He or she would focus upon lecithin amount, which is what Dr. Rabinow testified about.

And this wasn't really disputed that the POSA could look at lecithin amount for the purpose of routine optimization. And Dr. Rabinow gave three reasons for why the POSA would have focused on lecithin. Not based on hindsight, but looking at the prior art and showing what CN '845 taught a POSA.

The first of those three was CN '845 itself. It used high lecithin levels, up to

10 percent with ratios of up to 49 to 1 in the examples. And there are more -- those high emulsion levels had a reason because prior art used 1 to 2 percent in their lecithin, if the goal was to make an emulsion.

So something else was going on, and a POSA would have looked to CN '845 and looked at the procedure within CN '845 and recognized that there is a step. The first step is not just dumping everything into a formulation, but actually to put the drug, aprepitant, and egg yolk lecithin, the emulsifier, together in ethanol and then evaporating the ethanol.

And Dr. Rabinow explained, again unrebutted, that that would be a way to form a complex between those two components.

The second reason Dr. Rabinow emphasized for why a POSA would focus on lecithin levels is the Washington reference, JTX113. Here, the Washington reference described that for Class III compounds, and these are compounds like aprepitant that are neither soluble in water or in oil, that those could be soluble at the interface between the two phases, the oil and the water.

And that is what the explanation

somebody would recognize, a POSA would see, once CN '845 is available that Washington explained the mechanism for why it worked.

But Washington went on. It went on to say that increasing the surface area would help to further increase and solubilize the drug, and a POSA would, therefore, take from Washington the motivation and direction to increase lecithin levels specifically for stability.

And the third focus point that Dr. Rabinow explained were other POSA knowledge regarding complexation. And the complexation references here were just to show examples that a POSA would have been aware of, as Dr. Rabinow explained, where egg yolk lecithin in particular had been used to form complexes with drugs.

And those complexes, these are basically interactions between the egg yolk lecithin and a drug, helped to stabilize the formulations in the prior art examples, as well.

Each of these three reasons points in the direction of higher emulsifier levels for higher stability. That set the expectation, and that expectation was reasonable.

Heron's response to all --

JUDGE BRYSON: Just briefly, if I could interrupt.

What is the best authority that you have in the form of exhibits or otherwise for the third proposition?

MR. ALY: Yeah, for the third proposition, it's the testimony of Dr. Rabinow. And in his testimony, he's referring to three exhibits. The three exhibits are the Yue reference, Agarwal, and EP825.

JUDGE BRYSON: Now, when you say "Yue," is that -- did I misunderstand you? Are you talking about the Liu reference, L-I-U, or a different reference?

MR. ALY: Sorry, different reference. Y-U-E.

JUDGE BRYSON: Y-U-E. Oh, okay. Good, I got it. All right.

MR. ALY: And for the record, those are -- Yue is JTX114; Agarwal, JTX67, and EP279 reference was -- by Bombardelli is JTX74.

And from there --

JUDGE BRYSON: Okay.

MR. ALY: Thank you.

From there, what is Heron's response to

these motivations and the reasonable expectation of success? It is simply that we could not predict for sure with absolute certainty --

JUDGE BRYSON: Let me interrupt once again.

Those three references do not include aprepitant; right? They're not aprepitant related, they just are talking about other complexing with lecithin; right?

MR. ALY: That is correct, Your Honor. Yes.

JUDGE BRYSON: Okay. All right. Go ahead.

MR. ALY: And so the question that Dr. Rabinow was addressing on those points and why he was talking about those examples is to answer the concern or, you know, maybe caution: Was CN '845 the first to come up with complexation or in coming out of this argument using just a new approach, Dr. Rabinow?

And it's the commonality of the approach of complexation that Dr. Rabinow was addressing, and those were not about aprepitant in particular. CN '845 was the first to do this approach. But it was to show that that approach was established and

known, and at that point it was not disputed.

And Heron's response is that it's not absolutely certain. Their expert Dr. Little explained that increasing lecithin does not always guarantee increased stability and that there is some upper limit. Both are true. But neither address the reasonable expectation of success.

A reasonable expectation of success, of course, must be reasonable, not absolute. And here, there was every reason to conclude that the reasonable expectation of success for achieving a stable formulation that meets USP 1 and USP 729 and, therefore, also meets the construed term "physically stable."

What were those reasons in particular? I explained earlier the CN '845 reference reported terminal sterilization, that's favorable information, with lecithin levels at 10 percent.

Zhou, JTX115, did the stability study and as we pointed out with KE, but, again, gave that positive confidence, both directions, to show that increasing lecithin would likely meet USP standards.

And in response, again, Dr. Little does not say there's no reason to conclude that would

not happen. He's just saying it may not happen always. That was the testimony.

This is a good place to discuss the Liu reference that Your Honor mentioned. That's L-I-U. That's JTX93. And that fits in as far as the routine optimization and combination about how much emulsifier could a POSA have used.

To answer that question, Dr. Rabinow first looked at CN '845 and said, 10 percent is not an upper limit. A POSA would naturally try values above the 10 percent within routine optimization.

And Dr. Rabinow also looked to the Liu reference and explained that a POSA would look to a reference to find out -- for several reasons, but two among them would be that Liu was about microemulsions, which Liu itself said were part of emulsions.

And at that point in time, this 2014 time frame, the word "microemulsion," the word "emulsion," they were used in overlapping ways, not always technically precise, reflecting a continuum between the two as related terms.

And Liu also was used for a different reason that Dr. Rabinow explained, which is if a

POSA wanted to know what information there was for safety of increasing lecithin, is 10 percent really a cap?

Liu showed that actually up to 30 percent phospholipid had been used. Phospholipids, in particular, were called out, as the testimony showed, as natural products that were, therefore, known to be safe.

For those reasons, Dr. Rabinow explained the 5 to 30 percent of the Liu reference gave a working range for testing the emulsifier level.

Here, in response, Dr. Little explained that Liu is about a microemulsion. But, unfortunately, Heron's briefing doesn't address the fact that microemulsions were part of emulsions, they were overlapping terms, and that Von Corswant explained that that's how they were used. So people were looking at each of them in parallel.

JUDGE BRYSON: You said --

MR. ALY: CN '845 itself --

JUDGE BRYSON: If I could interrupt for a second.

MR. ALY: I'm sorry.

JUDGE BRYSON: No, it's Zoom. You're

not hearing when I start talking if you're talking. So it's not your fault. It's the fault of Zoom.

The whole question of which a considerable chunk of the briefing is addressed to of whether microemulsions of this sort, or whatever you want to call them, the items that were discussed in Liu, are different not just in degree but in kind from the emulsions that are discussed in other references and the emulsions that are applicable here.

The argument that Alcon is making is that you really can't extrapolate from anything said in Liu because you're talking about something that is different in kind.

And I understand that certainly at a certain point in time, and perhaps even to some extent today, the microemulsion -- there's some perhaps lack of agreement in the field as to the scope of what constitute -- the scope of what is an emulsion incorporating or not incorporating microemulsions.

But I'd like you to address that question. It does seem to me to be a fairly important question with respect to the

applicability of Liu.

MR. ALY: Of course, Your Honor.

Three things that I'd like to respond to.

Point number 1, that it is related art to the same field, which is formulating emulsions. And under Dr. Rabinow's analysis, the emulsions as a category included various sorts which were not differences in kind, not different animals altogether, but they're subsets which have a continuum, was the word that he had used at trial, to show that there isn't a bright line when something is a microemulsion versus an emulsion.

And that's important here because in the vocabulary, as Dr. Little acknowledged, people would call these formulations microemulsions because they used a microfluidizer and had microscopic level particles.

And so there's always overlap between the formulations, not only because of the similarity in how they were used, the formulation components, approaches to making emulsions, but also because of the vocabulary. That's point number 1.

Point number 2 that I'd like to

emphasize is that as far as the safety teachings, so if -- even if one were to assume that it's a different kind of formulation altogether, which is not our position, but even under our assumption, Heron has not responded to the point that if a POSA wanted to look at what levels were safe, where would they look?

And this could be in something of a manual, a Remington's-type manual, which is something formulators might look to. That would be a general reference. And that would say, Here, people have used up to 30 percent lecithin, and that's safe.

In this case, though, Dr. Rabinow explained, We have something far more precise. We have, within the emulsions world, the microemulsion reference that is showing up to 30 percent lecithin would be safe. So even if it's used for the safety reason, that would be useful.

And the third point I'd like to make is that it is, at the minimum, analogous art because it's showing that we're talking about items directed to the same problem. We're talking about two references that are directed to making

emulsions. An emulsion is the combination of two phases, that it's basic, oil and water.

And so when you have those two combinations of oil and water, the distinction Dr. Little has made is some are going to be more stable than others. And that's the distinction that has been made so far.

But that, again, is a matter of degree and not something that is a matter of kind, and there's no evidence that showed that suddenly there's a flip switched and here's something that happens in this formulation and does not apply at all to another formulation.

And for those three reasons, Your Honor, the Liu reference is applicable, and Dr. Rabinow's analysis is appropriate.

I would also add that even without Liu, the analysis remains the same. Dr. Rabinow explained that CN on its own had up to 10 percent emulsifier already showing the emulsifier worked with stability and complexation.

And then asked the question just when CN '845 was being discussed about whether the levels were enough for USP stability and how high a POSA would go just by looking at CN '845,

recognizing the small differences between 10 percent and moving up from there, 11, 12, 13, 14, 15 percent.

So this is not a matter of where night-and-day difference between what had been used and what had been applied for that reason, as well, just looking at CN '845.

JUDGE BRYSON: Okay.

MR. ALY: Next, as far as routine optimization is concerned for why would it be routine optimization to address this problem, the routineness of the approach is not disputed. Dr. Little conceded at trial that stability testing is routine even if it takes a long time to get results. The approach is routine, something within the POSA's wheelhouse.

For optimizing, Dr. Rabinow explained that would be a POSA's bread-and-butter job to look at variables, assess them, test them, and obtain results for a standard. And here, it's not just shooting in the dark.

Here, we know, and the POSA would have known, that actually optimizing for lecithin would be a result effective variable, because -- a POSA knew that from looking at CN, of course.

But, more importantly, Khan itself expressly explained that there would be a result effective variable because the egg yolk lecithin in a formulation was known to be very important, most important formulation component in an emulsion for stability in particular. That's the Khan reference, JTX91.

And when a POSA then, therefore, is looking at the prior art and optimizing, Dr. Rabinow explained that they would set the parameters, run the tests, and then come up with the results.

And in response, Heron showed no criticality for any particular component or number, and there's nothing that Heron showed or Dr. Little explained would be known as a redline or too much lecithin from the prior art.

And what instead happened here is that Heron says, If you look at their real-world evidence, it showed they did something dramatic and different. But what was that?

It was optimizing the prior art, starting with CN '845, in particular, and optimizing for USP. It's not following something new or coming up with an invention. It's calling

the prior art and implementing it.

So that 14 percent, which is a claim term, is something a POSA would have arrived at from the routine optimization specifically for USP optimization, and that is the critical issue in the case for which Heron did not show criticality for that number.

Now, Your Honor, I'd like to move to two components and then move to secondary considerations. There are two components, sucrose and sodium oleate, which are in dispute.

Sucrose, we were surprised to see that it was disputed. It had never been called out before or at trial. But the short answer is sucrose was in CN '845, in the list and in the patent disclosure, as one of equivalent options and tested by Heron to show that it made no difference which sugar was used.

Sodium oleate, more dispute about this was at trial. We know there's --

JUDGE BRYSON: What function does the sucrose serve, as best we know in this formulation?

MR. ALY: It's a tonicity agent. And Dr. Rabinow explained it helps the osmolality of

the drug.

JUDGE BRYSON: Osmolality. And --

MR. ALY: Osmolality.

JUDGE BRYSON: And that's it; right? Is it osmolarity or osmolality? It doesn't sound --

MR. ALY: Osmolality. But people tell me they're very related. It's with the two Ls.

JUDGE BRYSON: Oh, I know they're related, but for purpose of getting it right, I want to make sure that I get the right consonant.

It's osmolality; right?

All right. That's what --

MR. ALY: Osmolality, that's right.

JUDGE BRYSON: That's what I understood. Okay.

Keep going then.

MR. ALY: Yes. Sodium oleate, there is dispute about this component. And we know that there is a pH adjuster that is used in CN -- it says that in CN '845, but a particular one was not named.

So what Dr. Rabinow explained is that sodium oleate would be obvious in view of the CN '845 disclosure. It may not be the only choice, but obvious choice. Why? Because Zhou

was -- the Zhou reference, switching to the Zhou reference, added oleic acid and had a basic pH of 7.3.

So as Dr. Rabinow explained, instead of a POSA using the oleic acid and then adding sodium hydroxide to raise the pH, it would be -- the direct approach would be to use sodium oleate. They're conjugate bases, the oleic acid, the sodium oleate. Sodium oleate is a salt form of oleic acid. So it's basically inherently formed whenever there's anything with sodium that is added. And the --

JUDGE BRYSON: If you have a pH over 7, then you're going to be converting the oleic acid into an oleic just automatically?

MR. ALY: Automatically and inherently.

JUDGE BRYSON: Yeah.

MR. ALY: Yes. Yes.

JUDGE BRYSON: All right.

MR. ALY: And another reason Dr. Rabinow explained to use sodium oleate is it's already in egg yolk phospholipid. So if you're going to use it, why add something different, foreign, when it's already a natural component, you're just shifting the values of it.

Finally, sodium oleate commonly used in emulsions, looked at Wan, Fell, and Jumaa. Those are JTX112, JTX76, and JTX88, in that order. And the key point for Heron's briefing is that they contest whether sodium oleate would have been safe. But Jumaa, JTX88, made clear that sodium oleate was very safe in the emulsion context with egg yolk phospholipids. And that is why they were so commonly used.

JUDGE BRYSON: Could you give me those --

MR. ALY: Dr. Little, in response at trial --

JUDGE BRYSON: I'm sorry, could you give me those exhibit numbers again? I want to make sure that I have them right. The three exhibit numbers you recited.

MR. ALY: Yes. Wan, JTX112; Fell, JTX76.

JUDGE BRYSON: Right.

MR. ALY: And Jumaa, JTX88.

JUDGE BRYSON: Right. Okay. Thank you.

MR. ALY: And the point I was simply making is that Dr. Little and any of Heron's experts at trial didn't mention Jumaa. It was a

totally unrebutted analysis that Dr. Rabinow provided, showing sodium oleate's safety specifically in emulsions.

Now moving to secondary considerations, Your Honor.

First, there's an assertion of a long-felt need, but there's a confusion as to what that need is. And I'll be listening carefully today, as well, because there's a back-and-forth between hypersensitivity and injection site reactions, injection site adverse events, what are those differences and what was the trial evidence.

The trial evidence was that in some articles polysorbate 80 is associated with hypersensitivity, the systemic allergic reaction. Both Dr. Roeland and Dr. Markman addressed that. But that's distinct from a localized injection site adverse event, something that's happening where the needle is going into the skin.

And there's not evidence and data about a hypersensitivity problem or difference. The evidence and data that Dr. Roeland relied upon was not about hypersensitivity, even though that is the thing associated with polysorbate 80, according to Heron.

Instead, what Dr. Roeland testified about was a difference in warning label as to the injection site adverse events, and much of the briefing is about injection site adverse events. That isn't linked to polysorbate 80.

And in any event, those injection site adverse events are 1 to 3 percent reported for the drug, and there's nothing that showed that there was a long-felt need or a clamoring to eliminate those injection-site reactions.

One evidence that they did point to, Heron did in their briefing, is a Mayo Clinic example that switched from the injection of Emend IV to the oral aprepitant. But it seemed to me, reviewing the briefing and the article, that that's a common sense approach that you're going to have more injection-site reactions when you give an injection as opposed to giving something orally.

It wasn't the combination of different injection versions of aprepitant. It was just saying that when you have an oral version and it worked as well for some patients, why go through the injection that introduces potential injection-site adverse reactions? That's the Mayo

Clinic study that Heron referenced.

But either way, on long-felt need --

JUDGE BRYSON: So is there any evidence as to what the cause of the injection-site reactions might have been?

MR. ALY: No, there was not evidence provided at trial, and Dr. Roeland did not explain what he thought was causing the injection-site adverse events either. There is definitely a pallor of polysorbate 80 is doing something problematic, but that's -- the evidence was about hypersensitivity and allergic reactions --

JUDGE BRYSON: Okay.

MR. ALY: -- not injection site.

And, ultimately, when it comes to long-felt need, whatever we assume or whatever the allegations are that are made as far as assertions regarding a long-felt need, CN '845 addressed them.

If it's because of polysorbate 80, that's addressed by CN '845. If it's because of -- because CN '845 had formulations without polysorbate 80 and preferred formulations without polysorbate 80.

If there's some other issue about time

or administration, CN '845 addressed those as well. And, ultimately, there could not be a long-felt need between when CN '845 issued, which is the pertinent question, in 2012 and when the patent was -- the priority date for the patent is in September 2014.

And Dr. Markman just concluded it simply this way. There's not a long-felt need because any of the side effects that were shown, be they hypersensitivity or injection site, were medically manageable.

But all else being equal, if there was a formulation that didn't have polysorbate 80 in it, it's just one more reason to pursue the CN '845 formulation. Not the only reason, but certainly one more reason to pursue it.

Second commercial -- secondary consideration is failure of others. Here, the focus is on Merck's work from the 1990s. And it's from Dr. Hale primarily, who is not a formulator -- the Court found is not a formulator in the Daubert setting.

Dr. Little was given an opportunity to tie things together and explain how a formulator would have interpreted materials, but Dr. Little

did not do that.

So the trial evidence that we have is 1990s era work regarding medicinal chemistry, how to make different kinds of chemical compounds, and no evidence of formulation work that Merck did, tried, or published.

And even assuming there had been formulation work or evidence, it does not apply to the state of the art by 2012, when CN '845 and Zhou were published. And so, too, was Hingorani published. Hingorani was another reference that did an emulsion approach. It's JTX21.

For those reasons, we don't see and there was no evidence of any failure. Everybody who tried to make these emulsions did.

Unexpected results is the next secondary consideration for this. As a threshold matter, Heron did not have any evidence about an expectation in the first place from which to conclude that any test result they did would have been unexpected.

And we called that out in our opening brief, but Heron still didn't provide any -- a prior art expectation that somebody would have had to show that there was an unexpected result.

Instead, what we have is just test results. And there's a question as to those test results, whether they were even compared to the closest prior art and accurately replicated prior art, because there was no apples-to-apples comparison in terms of pH.

We have the CN '845 example, which is Example 4, but that used the pH of 7. Whereas, all of the other working examples, the first stable formulations in the patents, showed pH of around 8.8.

We have Example 5 --

JUDGE BRYSON: I missed -- you broke up there. Could you go back to the point at which you said the other examples, and then give me what the pHs were for those?

MR. ALY: Yes, the other examples in the patent were -- shown in Example 7 of the patent were between 8.7 and 8.9.

JUDGE BRYSON: Okay. Okay. Thank you.

MR. ALY: And there's also Example 5 of the patents, which we now know was a comparison to the Zhou article test. But there, again, they did not report in the patent what the pH was. And Dr. Rabinow's opinion was simply they did not

report it, so a comparison could not be made.

In Dr. Little's testimony at trial, we showed the lab notebook for that test that had a pH of 6.5 for the Example 5 formulation.

So, ultimately, the unexpected results evidence does not compare to the closest prior art. Next, if we look at the evidence, even at face value and what Heron is saying, unexpected results shows that increasing emulsifier increased stability. That's what Dr. Rabinow and the evidence showed would have been expected.

And, ultimately, all of these differences were of degree. One was more stable than another. So there is no evidence of unexpected results that should affect obviousness.

Copying, we saw -- it's called a white flag at this point in the response brief. So I'll move onto commercial success. Commercial success is where there is confidential information, but I won't go into it. I will just refer to what Heron did not redact, which is that strategic pricing here controlled the sales of the product and not any other advantages.

And there's no evidence that anyone bought Cinvanti for reasons having to do with side

effects or two-minute administration. In fact, it's all about the cost. Emend IV is still on the market, and the two are in tandem working to this day to address problems. And it's the strategic pricing that is why buyers make decisions for one versus the other in a particular amount of time.

The conclusion on obviousness is that when we weigh the strong case of obviousness, including the CN '845, Zhou, and Liu and Washington references, in view of all the secondary considerations, Claims 9, 10, and 21 of the '229 patent are obvious. And Claims 9 and 10 of the '794 would have been obvious, as well.

To point out, Claim 21 of the '229 patent is a method of using the formulation to treat CINV, but that is not in dispute that if the formulation is obvious, the method for administering it for that purpose --

JUDGE BRYSON: I just want to alert you that you're down to seven and a half minutes. You can either conclude now and save your time, or if you want to talk about infringement, you can do so.

MR. ALY: Yeah, my goal is to reserve about five minutes for the rebuttal.

JUDGE BRYSON: Okay.

MR. ALY: So the conclusion on obviousness that I want to emphasize is that -- what happened here? What was the big project that occurred?

Heron put up to its real-world example a new formulator who she testified, Dr. Han, was the first time working on an emulsion and applied CN '845 and did tests to show that adding emulsifier increased stability. That's what the evidence showed. Even for Heron's argument that we should look to what the inventors did as real-world evidence supports obviousness.

Briefly on written description and noninfringement. On written description, the claims include the full range of 7.5 to 9.0, even though the patent specification distinguished pHs less than 8 in Example 4. And the physically stable formulations were all 8.74 to 8.92. So there's no showing of a possession of 7.5 to 8. That's the argument.

Noninfringement is simply -- there's one element of the '794 patent physically stable, and that element is microscopy, for which there needed to be a microscopic test showing no visible

particles. Heron didn't test Fresenius Kabi's product, even though it could have done so and it was looking at a microscope after one week.

So they used their own tests instead and relied on inherency to do so. Same formulation means the same properties. And here in this case, inherency would be true whether the magnification is 4X to 10X or if it's 40X to 100X.

The point is, since Dr. Little relied on and Heron relies on the similarity of the formulations itself to imply what the properties would be for the formulation, that makes the "physically stable" term an inherent property of the claimed formulation and not something additional or more.

Heron points to other tests that they relied on at trial, but those used naked-eye observations, not microscopy. And Dr. Little himself said that you couldn't use the naked-eye observations to look for aprepitant crystals.

In conclusion, starting where -- ending where I started, we thank Your Honor and all involved for the time and ask for entry of findings that all the asserted claims are invalid and lack written description and are obvious, and

that the claims of the '794 patent are not infringed.

I reserve the rest of my time. Thank you, Your Honor.

JUDGE BRYSON: Thank you.

Mr. Ashkenazi, you have 45 minutes.

MR. ASHKENAZI: Your Honor, if I could have 30 seconds just to switch here. One second.

JUDGE BRYSON: Sure.

MR. ASHKENAZI: Thank you, Your Honor.

JUDGE BRYSON: Yeah.

MR. ASHKENAZI: Can you hear me fine?

JUDGE BRYSON: Yeah, I can hear you perfectly.

MR. ASHKENAZI: Great.

Apologies, one second, Your Honor. I'm just getting the audio up on my side.

JUDGE BRYSON: Okay.

MR. ASHKENAZI: Very good.

Good morning, Your Honor, and may it please the Court. Isaac Ashkenazi of Paul Hastings for plaintiff, Heron Therapeutics, Inc.

If it's okay with the Court, I'm going to spend a few minutes on infringement at the end

of my presentation and really focus on invalidity. Because Fresenius really hasn't disputed infringement at trial or in post-trial briefing or, as we heard today, nor is there really any basis for a noninfringement finding.

And, Your Honor, I know you said you'll let the parties go through their presentation, but I would really encourage -- any questions Your Honor may have, I'm more than happy to answer.

JUDGE BRYSON: All right.

MR. ASHKENAZI: So focusing on obviousness, I'd like to go over some of the big picture details and then -- big picture points and then get into some of the details.

The fundamental problem with Fresenius' obviousness analysis is that it's infected every step of the way with impermissible hindsight. And simply put, Fresenius has not satisfied its burden in proving by clear and convincing evidence that the asserted claims are obvious.

At the end of the day, no matter what we've heard from Fresenius today, there is no denying certain objective facts. There was a need for an IV NK-1 receptor antagonist with minimal

side effects, fewer side effects than Emend IV, that aprepitant with its properties akin to cement dust and its propensity to form crystals is an extremely difficult molecule to formulate as an IV for use in humans, and that Merck had to move to a pro-drug approach and create fosaprepitant because it could not make an IV for use in humans.

In fact, no one was able to accomplish this before Heron. And Fresenius has not pointed to a single prior art emulsion that had greater than 10 percent egg lecithin. And that's key, because we hear about this conjecture from Dr. Rabinow, but not a single reference had above 10 percent egg lecithin in an emulsion.

Zhou, which came after CN '845, had optimized down to 2.5 percent lecithin. And I want to be clear, because there was a question, Your Honor, CN '845 does not contain any stability test data at all.

Zhou, which comes afterwards, does optimize for K subE, as Your Honor pointed out. And that optimization gave 2.5 percent egg lecithin as the optimal formulation, in conjunction with other ingredients, which we'll get to.

Simply put, when it comes down to it, Your Honor, Cinvanti was and remains the first and only IV aprepitant emulsion on the market.

Now, facing all of this, Fresenius' only option was to look backwards at the prior art with hindsight and to inject new concepts where they just don't exist to come up with some obvious combination.

But the idea that a POSA would share any of these untested hypotheses just can't be reconciled with the evidence, like complexation, which isn't even mentioned in CN '845. And it can't be reconciled, that concept. A POSA wouldn't assume any complexation looking at the examples of CN '845 or Zhou. And we'll get into that.

Or the relationship of emulsifier amount to interface size and stability that Fresenius asserts, they say that's in Washington, which was published in 1996, but that's simply not stated there. And we'll try to go through that, as well.

But I think the most head-scratching thing, Your Honor, is they go to a completely different formulation system, microemulsions. And I want to be clear, this is not a terminology

question, whether sometimes people use the term "microemulsions" instead of "emulsions." These are entirely different and distinct formulation systems.

JUDGE BRYSON: That's an important question, and one that I would like to hear more from you and, ultimately, from Mr. Aly, as well, as to the distinction between the categories of emulsions and microemulsions, whether they are simply overlapping degrees -- differences as opposed to differences in kind.

So if you could help me on that, that would be useful.

MR. ASHKENAZI: Sure. So let's start off with just the concept of a microemulsion.

A microemulsion is a thermodynamically stable system. Emulsions are not. There is no continuum here, Your Honor. You can't have something that's maybe thermodynamically stable or possibly. These are just completely separately distinct things.

One just sort of snaps together. That's the microemulsions. They sort of come together, and they're stable by themselves. And they use very different and distinct components and ratios

and amounts of those components. And we'll get -- I can get into that in a little bit more detail, Your Honor.

Conventional emulsions are not. And that's these oil-in-water, as Fresenius puts it, or conventional emulsions or the standard emulsions that everybody looks at are not -- they're nowhere near the same level of detail with microemulsions -- sorry, the level of complexity.

Let's get into that for just a little bit more specific, Your Honor. There's no evidence that there's any -- been any microemulsion approved by the priority date.

Second, there's no evidence that anybody in the art would ever look to a microemulsion literature to say, Let me apply that to emulsions. It's just simply not present.

When we look at Liu, Liu itself says that these are very distinct systems that have their own properties. For example, Your Honor, I'm just going to pull up one point.

If we look at Liu, that's JTX93, at page 11, maybe if we could pull that up -- sorry, 10, if we can pull that up on the screen.

The first -- sorry, if we could go to

the top of the screen.

JUDGE BRYSON: I've got it.

MR. ASHKENAZI: Yeah. So it's the first line under 1.1 at the top, the second line -- the first line, the second sentence.

Liu, when talking about the microemulsions here, says, Firstly, the oil phase must have adequately high solubility for the drug.

And this is just one point, and Dr. Little went chapter and verse through this reference. But aprepitant is not soluble in oil. This has nothing to do with the emulsions of CN '845, Zhou, or anything like that.

If we could take that down.

Your Honor, let's also take a couple of points here. If microemulsions were so common and ubiquitous and the knowledge that you could use very high amounts of emulsifier would be known to a POSA, CN '845 clearly set the range of emulsifier from 0.5 to 10.

Also, if we're going to look at the microemulsions, we look at the distinction or the components that are used. And I mentioned this a little earlier, and I think I misspoke when I said the complexity.

Microemulsions use very different emulsifiers. They even use blends of emulsifiers. If we could go back to JTX93 at page 11.

So this is Liu, Your Honor. If we look at that table, that table is the list of emulsifiers that typically use surfactants for injectable microemulsions. And if we look at all these different types of emulsifiers, they don't -- we'll note one thing. They mention phospholipids, but they don't reference egg yolk lecithin.

Again, here, the point being is that this is a completely different type of system. It's completely different variables that you would consider here.

I want to be clear, we asked Dr. Rabinow, did he give us a single example of a -- this -- some emulsion that somewhere in the continuum between a conventional emulsion and a microemulsion, and he couldn't identify one. And that's because it doesn't make any sense.

We can take that down.

It doesn't make any sense, because one is thermodynamically stable, the other one is not. One snaps together and uses different formulation

components, and the other one doesn't. And they haven't identified any single piece of prior art that says, Oh, there is a continuum.

Rather, they're focused on terminology of Fresenius. Sometimes people make the mistake that a microemulsion -- they call conventional emulsions or oil -- conventional oil-in-water emulsions microemulsions.

Making a mistake doesn't mean a POSA now is just going to ignore science and go to and take from one reference something that nobody has ever done before.

And, again, I want to emphasize that. Not a single person -- not a single piece of evidence has been shown that somebody used microemulsion art to inform the formulation and development of an emulsion, the conventional emulsions that we see in CN '845 and Zhou.

With that, Your Honor, I'd like to -- unless you have any further questions, I'd move back to my presentation.

JUDGE BRYSON: That's fine.

MR. ASHKENAZI: Now, knowing all of these problems, Your Honor, the problems with Washington, with Liu, with general CN '845,

Fresenius tries to shift the burden, and we heard it a little bit today, for Heron to prove criticality of the ranges, but they have to prove obviousness by clear and convincing evidence. That's the burden on Fresenius.

They have to prove that there was a motivation to combine and a reasonable expectation of success. That's not Heron's burden. But, regardless, we did prove criticality. Criticality is shown through the Examples 4 and 5 of the patents-in-suit, which are the prior art for CN '845 and Zhou.

And this is a difference in kind, not degree. A difference of a formulation that's not stable, period, could not be given to humans and formulations that are claimed inventions. And, Your Honor, that's not even addressing all of the other objective indicia, which we'll get to a little later.

I want to, if I can, take a step back for a moment and talk about the state of the art in 2014. There was a need for an IV NK-1 antagonist with minimal side effects. Now, Fresenius says a POSA trying to solve this problem would have gone straight to aprepitant and

straight to emulsions instead of any other NK-1 receptor antagonist or formulation approach, but we saw by the priority date that Merck and others had failed with aprepitant and moved onto other NK-1 receptor antagonists.

Even Dr. Rabinow agreed, and if we could pull up 395, 6 to 9, that the POSA was interested -- POSAs were interested in NK-1 receptor antagonists as a class, not just aprepitant.

And if we could pull up 127, 17 to 24.

Dr. Rabinow also said that, in response to my question -- in response to the question that was asked of him at the time during direct, What would you like to see is development of an -- he responded, What you would like to see is development of an injectable that did not contain polysorbate 80 of fosaprepitant IV formulation.

That's Emend IV. That's recognition that a POSA would be looking to make something with fosaprepitant that did not contain polysorbate 80, not be focusing exclusively on aprepitant.

And there's very good reasons why a POSA would look elsewhere. Aprepitant, which is a

limitation of the asserted claims, is poorly soluble in both oil and water.

As Dr. Hale explained, and this is at 901:17 to 902:5, the physical characteristics of aprepitant made it very difficult to work with. Mr. Aly referred to this, and so did Dr. Hale, as cement dust, because it's largely insoluble.

And if we pull up 903, 8 to 22, we see here that Dr. Hale also explained how aprepitant really favored a crystalline structure. And he describes this as individual molecules readily efficiently pile onto each other to form these crystals. And he goes on to say, stacking each other in an ordered lattice.

JUDGE BRYSON: Isn't that really the critical problem to be solved here, was how to get aprepitant into solution?

You mentioned a moment ago that there were -- that there was a broader range of inquiry into how to solve the general problem of an emetic or an NK-1 antagonist. But with respect to the particular issue -- this issue comes up a lot in obviousness cases, is how broadly to characterize the problem.

But if we characterize the problem here

as what is it that is necessary to put aprepitant into solution, then that, it seems to me, confines the range so you're not worried about other NK-1 inhibitors.

Why is it that we should not characterize the problem to be solved as how to put aprepitant into solution? I guess that's the best way to put my question.

MR. ASHKENAZI: So I guess I have two points on that, Your Honor.

First, that's using hindsight. It's using the inventor's own work and the inventor's patented invention, the claims, to work backwards to say, Well, what's the simplest way to solve the problem.

There's no dispute, we just saw Dr. Rabinow agreed, that the goal, the motivation for a POSA, was to make an IV NK-1 receptor antagonist with minimal side effects.

To say that I'm just going to go straight to work with aprepitant, something that has been, number one, extremely difficult to work with and for over 20 years, nobody has made an IV, and say, I'm going to focus on that instead of easier solutions, that's working through

hindsight.

And that's very similar to what happened in the --

JUDGE BRYSON: I know of federal circuit cases that have addressed this kind of problem. I think of the Barr Pharmaceuticals case, the Bayer -- Bayer case, the Fulton -- In Re Fulton case, all of which are addressing problems of what is the scope of the -- how do we characterize the scope of the problem.

And each of them has said, You don't simply say, well, how in the world would one go about address -- given all the possible ways of approaching a solution to how to cure a particular illness, you look at what the prior art has shown you as pathways and ask, what are the barriers between the prior art and the solution.

And if that's the right approach, then the question is: How obvious is it to go from what the prior art has proposed a solution to actually having a solution. That isn't typically characterized as hindsight, but rather looking at the focus of what the prior art has suggested.

So that's the issue that -- one of the issues that concerns me here, is how to

characterize the problem to be solved.

MR. ASHKENAZI: Well, Your Honor, what we do see in the prior art is people working on a number of different issues. We see people in the prior art, for example, Fresenius cites the Karavas reference, but you'll see they're only talking about fosaprepitant there. Dr. Rabinow agrees that a POSA would be working on fosaprepitant.

So to say I'm going to be exclusively focused on aprepitant, or I'll go one step further, Your Honor, just aprepitant emulsions, because they've identified two references, that's saying a POSA, out of the sea of information that's available to them, would be narrowly focused on CN '845 and Zhou, instead of all the other options.

For example, in Hingorani they tried other steps other than emulsion techniques to try to get an aprepitant emulsion -- to try to get an IV aprepitant.

Again, the problem here is there's two parts. Number one, are we going to focus on just aprepitant knowing that there's things like fosaprepitant out there that are much more -- have

much better properties that don't readily crystallize, that aren't going to have this problem in the -- you know, when they're put into an IV.

And, number two, why am I going straight to an emulsion approach? And to say that a POSA is going to focus on -- just because there's two references out there, CN '845 and Zhou, and say let's just go straight to that, when there are other references showing people trying other things.

Or recognizing that there have been failure after failure of someone trying to get an IV aprepitant out there is to say, I'm just going to go and narrowly focus on what the inventors did.

JUDGE BRYSON: Okay.

MR. ASHKENAZI: Your Honor, I would say this issue was addressed in the Insight case, where the problem to be solved and the recognition of the properties of the molecule, just like here, a very difficult molecule to work with, lended itself to looking at the broader question. Because there's no motivation for the POSA to ignore those properties, the difficulty of working

with aprepitant.

And, Your Honor, we cited that in our briefs.

JUDGE BRYSON: Right. Yes, I saw that.

MR. ASHKENAZI: With respect to the other formulation approaches, if we can, I just want to focus on the fact that, as I mentioned, Hingorani did address cosolvents and surfactants.

And if we look at Strickley and Kamantz -- let's look at Strickley, JTX105.25.

To be clear, and to go back to the point, emulsions were not commonly used. In fact, there was only two FDA-approved emulsions. And as we see here, Strickley references that at this -- you know, this formulation strategy is rarely used for a commercial product.

I want to be clear, we're taking a very complex molecule, aprepitant, that has very difficult to work with properties, and we're talking about a complex system.

Fresenius tries to paint the picture that emulsions are easy to work with, they're so simple, they're so straightforward, but they're not, actually. And here, we see Strickley recognizing they're rarely used in commercial

products.

And if we could go to JTX105, that's Strickley at page 26, please.

If we could focus on that left-hand side, Your Honor, this is the table that you heard Dr. Little and Dr. Rabinow discuss. We see that these oil-in-water emulsions, not microemulsions, but oil-in-water emulsions is listed as the second-to-last.

Dr. Little referred to this as, you know, the order in which you're going to approach an IV development, and you go from the simpler to the more complex, with oil-in-water emulsions being the more complex, the second-to-most complex.

And even Dr. Rabinow testified when he was talking about -- sorry, go ahead.

JUDGE BRYSON: Getting back to the discussion a moment ago, do you agree that Merck, during its work on this problem, did identify solubilizing aprepitant as a method of approaching the problem, even though that was not something that they ultimately succeeded in doing?

MR. ASHKENAZI: Yeah, so solubilizing is -- yes, Your Honor, Dr. Hale explained that

they tried to find ways in order to increase the solubility of aprepitant to get it into an IV. And Dr. Hale gave the explanation of him actually making a salt of aprepitant.

We're not talking about emulsions. We're talking about making a salt of aprepitant. And he got it into solution, but then it soonly [sic] crystal -- it shortly after crystallized out. And the purpose --

JUDGE BRYSON: But they identified the problem, in part at least, as being how to solubilize aprepitant.

MR. ASHKENAZI: Your Honor, again, solubilizing aprepitant doesn't lead to emulsions. But, also, that's one of the --

JUDGE BRYSON: That's a different question. But thinking about the scope of the problem, there was at least something in the prior art that indicated that one approach to the problem was solubilizing aprepitant. So in that sense, it's not pure hindsight; right?

MR. ASHKENAZI: Except they failed to do that, and they said they had to move onto fosaprep- -- to make a pro-drug approach with fosaprepitant. The question is: Does a POSA

ignore all of this information, all of these difficulties instead of working with, for example, fosaprepitant or making an IV that doesn't contain polysorbate 80, Your Honor.

JUDGE BRYSON: All right. You can go ahead.

MR. ASHKENAZI: And, Your Honor, they did publish on that failure, and that was discussed, among other things, in the Hargreaves reference.

But I want to -- if we can shift our attention now. Your Honor, let's just assume a POSA is working with aprepitant. And let's just assume a POSA is working on an emulsion, which, again, I showed you is a truly difficult complex system.

To start, Fresenius hasn't convincingly explained why a POSA, looking at aprepitant emulsions, would be fixated on CN '845 as their starting point.

They say a POSA would have focused on CN '845 in 2014, because it had been a game changer for showing that you had to increase emulsifier towards 10 percent to be stable. But Dr. Rabinow asserted everything in CN '845 was

stable, even though it included formulations with as little as 0.5 percent emulsifier.

We also discussed at length at trial, Your Honor, and in the briefing, the Zhou reference, which comes after CN '845. Those authors optimized their previous work, and Fresenius pays lip service to it. They talk about it as if it provides information on KE, but then they ignore all the information that's contained in there.

If we could please pull up PDX5-1.

And this is -- on the top, Your Honor, is JTX115, which is the Zhou reference. And at the bottom, Your Honor, is JTX71 at page 13, which is CN '845 and the portion that Fresenius focuses on.

And what we can see here is in the top reference, this is the abstract of Zhou. They talk about the optimal formulation of aprepitant emulsion was, and it gives specific ingredients, aprepitant, 0.25 percent; soybean oil, 15 percent; egg yolk lecithin, E80, at 2.5 percent; and oleic acid was 0.125.

Your Honor, it's not saying anything about high amounts of emulsifier. It doesn't talk

about things approaching 10 in Zhou. It's focusing on optimizing down, bringing the number down to 2.5 percent. And they tested their range of 2 to 4, after doing some prescreening and initial work they described in Section 2.1.

By contrast, if we look at CN '845, it gives a broad range. For example, the emulsifier range is 0.5 to 10 percent. And, again, Dr. Rabinow said that everything in CN -- all the examples in CN '845 were stable, and they used as little as .5 percent.

Now, Your Honor, we do not agree that they were stable, and we've pointed out that they're not stable. There's no evidence that they were stable. And Dr. Rabinow admits, in fact, that there's no testing data. I want to be clear on that.

If we could pull up 318, 9 to 11.

Dr. Rabinow agreed that CN '845 does not contain any test data. He said, not explicitly.

If we could take that down.

That's where turning to Example 4 of the patents-in-suit gets interesting, Your Honor. That is where Heron tried to make an emulsion from CN '845, and they used 9.95 percent emulsifier.

And they found that it formed crystal within four days. And the pH that they tested was right in the range of 6 to 8, which is what's identified in CN '845.

So what does all this suggest, Your Honor, that a POSA would not have expected that CN '845 was stable. It had no stability data. And if a POSA would have made and tested it, they would have seen it's not stable.

If we could please pull up PDX5-1 for a few minutes.

And, again, I want to look at the range that's in -- these are very broad ranges of --

JUDGE BRYSON: Example 4 was taken effectively directly from the high range of CN '845?

MR. ASHKENAZI: So CN '845 is not a replicate of any example of CN '845, but rather it uses the high range 9.95, so right below 10 percent.

JUDGE BRYSON: And was that taken as a way of demonstrating that the range shown -- the top of the range shown in '845 was unworkable?

MR. ASHKENAZI: I would say that, Your Honor, with using all the other --

JUDGE BRYSON: And that was based on looking at '845?

MR. ASHKENAZI: That was based on the inventors' own work, Your Honor. The inventors took what they had, the information that they had, the knowledge that they built up, and they made Example 4.

And with that Example 4 -- and Dr. Han actually testified to this, that she used her best efforts to see what would work, to get something that would work, which included using at the high end of the range of emulsifier, Your Honor.

JUDGE BRYSON: I'm just wondering if there was any indication that the effectively 10 percent used in Example 4 was intended to demonstrate that CN '845 didn't work?

MR. ASHKENAZI: Well, that is what it shows, Your Honor. Whether that's the --

JUDGE BRYSON: In other words, was that -- were they aware of the CN '845 and they were saying, Okay, this just doesn't work, and here's why?

MR. ASHKENAZI: Yes, Your Honor. They were aware of CN '845. Yes, Your Honor.

JUDGE BRYSON: Okay.

MR. ASHKENAZI: And if we look at the range here at the bottom, this is, again, CN '845, JTX71, at page 13.

The portion that Fresenius focused on, this is an extremely broad genus, Your Honor, with aprepitant, but then just classes of drugs and huge ranges of these. It just says emulsifier, 0.5 to 10 percent. Co-emulsifier, 1 to 10 percent.

A POSA would have to make all of these choices -- a number of choices to get to the asserted claims, Your Honor.

JUDGE BRYSON: All right.

MR. ASHKENAZI: If we could now turn to -- if we could take that down.

Fresenius talks about routine optimization. It's not credible to think that a POSA would have made all these choices from within CN '845, all these departures from CN '845 that we're going to talk about, for example, going above the 10 percent limit of egg lecithin, using sodium oleate, which is not even referenced at all in CN '845.

And as the Federal Circuit found in Moderna, the unpredictable interactivity of these

various components really does render the claim obvious -- nonobvious.

JUDGE BRYSON: And what was the case you cited, I missed it?

MR. ASHKENAZI: Yes, Moderna versus Arbutus.

JUDGE BRYSON: Moderna, yes. Okay, fine. Okay.

MR. ASHKENAZI: Thank you.

JUDGE BRYSON: Go ahead.

MR. ASHKENAZI: We heard Mr. Aly talk about USP. It's not really credible to say that USP is going to motivate a POSA to select any ingredient or to select specific amounts of ingredients or to focus on certain directions or to pick 14 percent egg lecithin or sodium oleate.

The USP is really just a standard that needs to be met. It doesn't give any guidance whatsoever on which particular ingredients to use, what to change, or how to change it.

And let's be clear, Fresenius' argument is that the prior art was not stable and that you need to optimize to get stability. That's really important because that means the prior art did not actually have anything that worked. Nothing that

could be given to a human. Nothing that could be -- that would be stable for a sufficient time period. And we see that in Examples 4 and 5.

Instead, they have to try to get there. There could be no -- I just want to jump to this, because it was a point that Mr. Aly made. How could you have reasonable expectation of success if what you're basing it off of was a failure, it didn't work?

Now, Fresenius --

JUDGE BRYSON: Didn't it work; did it not? Part of it established that you could solubilize aprepitant?

MR. ASHKENAZI: Your Honor, the question --

JUDGE BRYSON: So what's missing is the stability; right?

MR. ASHKENAZI: Well, yeah, but --

JUDGE BRYSON: In your view, that's missing the whole ball game, I understand, but it is -- it worked to the extent that it solved one part of the problem; right?

MR. ASHKENAZI: No, I don't believe it solved any part of the problem. The problem -- and maybe this goes back to where Your Honor was

going to earlier. The problem is not, how do I solubilize aprepitant. Even Dr. Hale said that I could get it soluble, it just crashes out. How do I get something that could be an IV product, that's the key.

JUDGE BRYSON: Well, the first stage is to get it solubilized; right? As I understood, the prior art had failed to solubilize, period. It's just cement dust to begin with and cement dust to end with. But this is, as Mr. Aly characterized it, and I think this is a fair statement of his argument, that the breakthrough was to solubilize aprepitant. And then --

MR. ASHKENAZI: So, Your Honor --

JUDGE BRYSON: His argument is that after that, routine optimization is what is necessary to establish the increased stability up to the point that you have something that satisfies USP?

MR. ASHKENAZI: Your Honor, I don't believe that that's the proper way of approaching it. Because it's not just, can I get this solubilized, can I get it solubilized for a short period of time. That wasn't the issue. Dr. Hale said that he did that 15 years earlier.

The question is: Can I get something that's going to maintain its solubility? It's not about -- you know, they tried to say that CN '845 provided -- you know, gave a way to tell you that you could get it solubilized. Hingorani, for example, shows that 1 percent is going to solubilize. There's nothing to tell you that going -- there's nothing to tell you going higher is going to matter or is going to help.

But much more importantly, Your Honor, if the question is just about solubilizing, that would be one thing. It's not. It's about how to maintain the stability over time. That is the creek -- sorry, I can't hear you, Your Honor.

JUDGE BRYSON: I understand your distinction. I just am trying to parse out what portions of the multiphase problem were addressed by 49 -- '845 and which portions weren't. And I understand the argument you're making.

MR. ASHKENAZI: Okay. I'll say, Your Honor, if the whole point is to get it solubilized and to look at what the properties are, then we can look at Zhou for a moment.

Zhou says they optimized. They took a range of different ingredients, right, because all

of these are interdependent. If we look at Zhou, they looked at multiple different ingredients and different ranges for the ingredients, because they all matter.

And they look at Zhou, and Zhou says, Okay, I'm going to determine that from my previous work, I'm going to focus on, you know, what -- I'm going to try to see what would be the best optimal formulation. And they optimize at 2.5 percent. So if we're going to optimize, why are we going any bit higher, Your Honor?

JUDGE BRYSON: Okay.

MR. ASHKENAZI: Now, I want to touch on complexation for a moment.

JUDGE BRYSON: Sure.

MR. ASHKENAZI: Fresenius says that a POSA, looking at CN '845, is going to say that it complexes, but let's be clear. They can't reconcile that aprepitant is -- that they would look at this, and a POSA would realize that aprepitant complexes with the phospholipid egg yolk lecithin.

First thing, CN '845 mentions nothing at all about complexation, not a single word.

Second, when we look at Example 6, that

had 0.5 percent -- this is Example 6 of CN '845. It had 0.5 percent emulsifier. Dr. Rabinow agreed that that doesn't sufficiently complex. Or when we look all the other examples in CN '845 -- if we could go to PDX4-4.

We'll see here, Your Honor, that a number of the other examples in CN '845 don't even use egg yolk lecithin. They have poloxamer for Example 2. Example 3 has polysorbate. Example 8 has PEG, and I'm not going to try to pronounce it.

But the point is, is that to say that CN '845 -- to say that CN '845 is focused on talking about complexation can't be reconciled with what CN '845 is. It doesn't rec- -- it can't be reconciled with the amounts that are used in CN '845, and it can't be reconciled with the ranges and the described examples of the emulsifiers.

Probably most importantly, Your Honor, is that to say that CN '845 is teaching you complexation, they've already given you a range for complexation then, 0 to 10, which we don't agree with because, again, there's nothing referenced in here.

Your Honor did ask about the other three

references. That's EP279, Yue, and Agarwal. I just want to be clear. Those were not IV -- those were not complexes for IV products, for IV application. They're related to different drugs.

And each one of them just used a ratio of 3 -- of a little bit less than 3 -- about 3 to 1 of emulsifier to the drug. Nothing near what we're talking about here, which is a 20 to 1 ratio and using high amounts of emulsifier way above 10 percent.

I would like to talk about Washington for a moment, Your Honor, because a lot has been said about what Washington teaches, but I want to actually just take a moment to look at what it actually says.

If we could look at JTX113.9.

So this is the portion of Washington that Fresenius is focused on. The actual teaching from Washington is that it's often necessary to post load emulsions with Class III drugs in order to have a large surface area available for loading.

All it says is that you add the drug to an emulsion after the emulsion is formed instead of before the emulsion has formed for loading the

drug. It doesn't say anything about increasing emulsifier amounts, about getting higher surface area, or about relation to stability, nothing.

And let's be clear, Your Honor. Washington was published in 1996. This is while Merck was still working in the field, before CN '845, before Zhou, before Hingorani, before all the other prior art references. Nobody took Washington and said, Oh, I need to get a much higher surfactant -- much higher emulsifier amount.

There's actually no evidence that anyone looked at Washington or would even suggest that Washington says use higher emulsifier to increase stability, as Fresenius has consistently asserted.

If we could turn, Your Honor -- I do want to focus on for a minute the Khan reference, because we heard a little bit about that, how Khan explained how emulsifier is really important.

That's JTX91. If we can go to page 5, please.

Your Honor, this is the paragraph from Khan that Fresenius is focused on. And they focus on the first sentence saying, The amount of emulsifier agent is one of the most important

factors having an influence on the emulsion.

What they quickly gloss over is the fact that later on what we see is that emulsifier -- that the emulsifier concentration window is tight. And afterwards you quickly -- emulsion stability quickly declines. And at high emulsifier concentrations, emulsion instability occurs because of rapid coalescence.

Now, what we discussed with Dr. Rabinow and what this reference is pointing to, that high amount of emulsifier concentration, in that reference that's being discussed, Gonglun and Daniel, which I believe is JTX79, was 0.5 percent emulsifier in that emulsion. Not 5 percent, not 10 percent, 0.5 percent.

The point being is that increasing emulsifier is not just simply, Oh, I go as high as I -- just keep going higher and higher until I achieve stability. No, what it's saying is that increasing emulsifier can lead to instability and that be very careful going higher. And, in fact, Dr. Little explained that you generally -- when using ingredients like this, you want to use as low as possible.

If we could turn our attention to --

Your Honor, I did want to mention with respect to Liu a couple of things. There's no dispute that Dr. Rabinow agreed that the aprepitant emulsions that are in this case, CN '845, are not microemulsions. He actually -- he testified to that. There is no question that CN '845 is -- the specific emulsions that are being tested in there are not microemulsions, or Zhou.

And, Your Honor, if we can, if we can go to 161:3 to 162:4 -- 24.

I'll just -- I'll state it, Your Honor. If we look at that portion, Dr. Rabinow said, We're not -- we're obviously not forming a microemulsion, we're forming an emulsion. That's a distinction he drew.

And I will say, Your Honor, that when we look at the references, for example, Von Corswant explicitly draws a distinct difference between emulsions and microemulsions. And I mentioned this a little bit earlier, but maybe if we can go to PDX5-3.

So PDX5-3, this is Von Corswant on the left side. And you see here they're not talking about a continue- --

JUDGE BRYSON: The Von Corswant exhibit

number?

MR. ASHKENAZI: Yeah, sure, JTX --

JUDGE BRYSON: Oh, JTX110?

MR. ASHKENAZI: Yes. And I'm specifically at page 3, Your Honor. And the portion of the testimony that I have on the right-hand side is 341:1 to 23.

And what we're seeing here is that, for example, Von Corswant and everybody else, they know there's a distinction between emulsions and microemulsions. And they don't talk about them as a continuum. They actually talk about them as distinctive and different. Only Dr. Rabinow was the one who said that there's a continuum, but provided no support whatsoever.

Again, we're not talking about whether there's a broader, you know, title emulsion, and maybe some people talk about conventional oil-in-water emulsions and microemulsions. We're talking about the systems themselves.

If we could take that down, please.

And, Your Honor, I do want to mention this one thing because you heard --

JUDGE BRYSON: Now, you have -- you're down to about a little over four minutes. So --

MR. ASHKENAZI: Okay. A couple of points quickly, Your Honor.

With respect to safety, safety has nothing to do with thermodynamic stability. Knowing that you could give a micro- -- knowing that microemulsions may have up to 30 percent -- by the way, again, no FDA-approved microemulsions that we were discussing from the prior art -- doesn't tell you anything about them confer -- about how that's going to deal with stability.

And, in fact, we discussed this, we referenced this at pages -- in our brief, and it's Dr. Rabinow's testimony 341:24 to 342:11.

Your Honor, with respect to sodium oleate, I just want to make a quick point. There's no dispute that Wan -- the authors of Wan found that sodium oleate caused hemolysis in emulsion. That was their conclusion.

Dr. Rabinow disagrees with their conclusion. He has some hypotheses, but they haven't shown that a POSA would ignore the authors' conclusions.

And let's be clear. Jumaa actually showed that for their systems, a certain amount of sodium oleate does cause a problem.

The point is sodium oleate is a known issue. Why use sodium oleate as a pH modifier, Your Honor? There's no evidence to say a POSA would choose that over something else, when the goal is to make something with minimal side effects.

Your Honor, when it comes to unexpected properties, I just want to make a couple of quick points. Again, we don't believe we need to show criticality. They haven't met their burden of proving obviousness by clear and convincing evidence before even addressing objective indicia.

But I will say that with respect to Example 5, Example 5 is a re-creation, and Dr. Rabinow agreed, of Zhou. There is no pH modification step at all in Zhou. They took the ingredients, they put it together, and they tested it.

And Dr. Han explained that, Well, look there could be differences in the pH meter that was specifically used at the time. But it doesn't matter. Fresenius hasn't shown or provided any basis to say that the formulations were stable. And, in fact, their whole argument is, Well, they're not stable. So I need to increase the

stability, I need to go higher, I need to increase the lecithin amount.

Your Honor, I will also -- with respect to the other objective indicia, I think our brief is clear.

For infringement, I do want to be clear, because we didn't hear Mr. Aly discuss it. Fresenius does conduct a more stringent test for proving crystal content. Besides the fact that their specification clearly -- they seek approval for a product that's going to have zero crystals, their test, which uses this ultracentrifugation test, shows that they concentrate a thousand times the volume to get it down and to look through the -- and to evaluate the crystal content.

There is no dispute in this case, no one has provided any testimony or any evidence to contradict Dr. Little's assertion that is a more stringent test. And, Your Honor, as we know, the case law is clear, and you actually addressed this during summary judgment, you do not -- there is no requirement to use the actual test, but rather something that could be used to show that that test criteria would be satisfied.

And with respect to written description,

Your Honor, I do want to, if we can, please pull up PDX5- -- sorry, if we could please put up JTX1.18, and that's Claim 8 of the patent, and JTX1.8, Column 4, line 65 to 67.

JUDGE BRYSON: Why don't you just tell me what's in those. I can't --

MR. ASHKENAZI: Yeah. Your Honor, it's a simple visual to cite. To assert that the specification didn't have the claimed range of the pH is preposterous. We see right there at the bottom, which is a portion of the specification, they explicitly state the claim range.

And, Your Honor, I want to be clear, because Fresenius tried to misconstrue what we were showing. We're not using Fresenius' specification or Heron's specification to say, Oh, we could prove written description.

No, we're just saying that their assertion that these lower pH ranges would not work is preposterous, and it can't be reconciled with their own obviousness assertion that a POSA believes that the alkali range would -- that anything that's in the alkali range would work for an emulsion.

JUDGE BRYSON: Okay.

MR. ASHKENAZI: Your Honor, I think that reached my time there.

JUDGE BRYSON: Yes, you have.

I do have one follow-up question with the sodium oleate causing problems, but sodium oleate is in the patent. Why --

MR. ASHKENAZI: Yes, Your Honor. Yes.

JUDGE BRYSON: Why is that not as problematic if it's in the patent?

MR. ASHKENAZI: Well, the point is, Your Honor, what a POSA would believe at the time. Is a POSA going to choose sodium oleate? And we're not asserting sodium oleate always causes problems.

What we are saying is a POSA, back in 2014, would they have chosen to use sodium oleate, when it's not contained in CN '845. The point is that sodium oleate can in certain instances and certain formulations --

JUDGE BRYSON: It's referenced in Zhou; correct?

MR. ASHKENAZI: I'm sorry?

JUDGE BRYSON: Sodium oleate, if I recall correctly, is referenced in Zhou; correct?

MR. ASHKENAZI: Only oleic acid,

Your Honor --

JUDGE BRYSON: Right. Yes, oleic acid. And any of the oleates and oleic acids are going to be, effectively, the same thing; right?

MR. ASHKENAZI: Well, no, there's two points in there, Your Honor.

First, they used oleic acid as a co-emulsifier. So they weren't just using it as a -- it's not being used as a pH modifier. It's using it as a co-emulsifier, which is separate and distinct.

I want to be clear. If you're picking oleic acid, you're not using ethanol, right. They're trying to have their cake and eat it, too. They want to say, Well, I'll take oleic acid from Zhou, but ignore the other components of Zhou that we saw, Your Honor, all of the differences between Zhou and the prior art. But, also -- sorry, Zhou and the claimed -- the asserted claims.

But, also, Your Honor, when it comes to the use of oleic acid, they didn't test those formulations at all in any in vivo model.

JUDGE BRYSON: Okay.

MR. ASHKENAZI: They just simply used them.

JUDGE BRYSON: Yeah, I think we have to --

MR. ASHKENAZI: Yes.

JUDGE BRYSON: -- bring in.

Let me go back to Mr. Aly.

Mr. Aly, you have, I think, just about five minutes.

MR. ALY: Thank you, Your Honor.

I'd like to address four different points. First is the microemulsion/emulsion. I'll spend most of the time on that point. And I'd like to start by sharing JTX110. That's the Von Corswant reference.

And in that particular reference, we're looking at what was disclosed in Von Corswant, which is a reference that Dr. Rabinow testified about, not Dr. Little. And today counsel pointed the attention, if we can all see it on the screen, to paragraph 9, defining the two using their classic definitions.

But in paragraph 11, which Dr. Rabinow addressed, and, again, Dr. Little did not rebut, we see that there was a benefit of being a microemulsion. But how the terms were used in the prior art, Von Corswant discusses using the

example of EP258.

And in paragraph 11, going onto the next column, exemplified that there were -- the microemulsification, although it was called a microemulsion in that reference, was achieved by using mechanical energy input. So it is not a microemulsion, according to the usual definition for "microemulsion."

The point being that Von Corswant recognized that there are classical definitions, but the usage is not consistent with those in several cases. This is not referencing in Von Corswant the CN application. It's another example of microemulsions and emulsions having overlapping teachings.

Counsel, Mr. Ashkenazi, testified that he thought that maybe different components were used or different excipients. There's no evidence of that. The evidence is that there's an overlapping amount, which makes sense.

Still continue with sharing the screen and looking at JTX93, it refers to -- in Table 1, this is JTX93.11, the Liu reference has the Table 1 which has types of commonly used surfactants for injectable "microemulsions," is

the word used there. But the list of excipients that is used overlaps substantially with the CN '845 disclosures, including polysorbates, specifically polysorbate 80 as an example of what can be used --

JUDGE BRYSON: Mr. Aly, are we in Liu here with this table, did you say? This is the Liu reference?

MR. ALY: Yes. JTX93 --

JUDGE BRYSON: Go ahead.

MR. ALY: -- correct.

And what I was just explaining is that overlaps with the CN '845. And underneath the table, there's even an example called out, The Sustol HS has better compatibility compared to the aforesaid other surfactants and can be used for intravenous administration of emulsion. So referring to the fact that there's an emulsion effect usage that had been established for some of these experiments.

In Liu itself, if I can go to JTX93.9, and we're going to look at the first sentence, it defines "microemulsions." And then there's a particle size description of 100 nanometers.

I call attention to that, Your Honor,

because Dr. Rabinow at trial, and now I'm referring to Dr. Rabinow's testimony at page 161, lines 3 to 14, explained that in the context of CN '845, what a person of ordinary skill in the art would see is CN '845 called their formulations microemulsions.

And in that context it was clear because of the size of the microemulsion. Again, 50 to 100 nanometers in that reference, as well. The point being the microemulsion size criteria is what overlapped here, the particle size, and that particle size is a function of lecithin level.

So in combination with the transcript testimony, CN '845 usage, contemporary usage, and the Liu reference being an analogous reference, there's no testimony or an example of something that says Liu would just be completely inapplicable. And it's no basis to have said that either.

This case is, therefore, like In Re: Aller, where we're looking at verifying -- what different variables there exist, how they are known to be used, in what safe amounts had they been used, and applying them to the situation at hand.

The second point, therefore -- and I'm wrapping up -- is that in the 14 percent optimizing of Zhou, that there's no optimizing down. There is just optimizing in terms of the KE that is used to optimize in that reference versus USP in the case at hand.

The third point I wanted to make -- and Zhou did have several other stability points because it was to show that promising effect of stability in an emulsion, not just a theoretical stability, but it did not need to be optimized for USP.

Third or fourth point, as I conclude, is the Merck work ignores the timeline and the evidence. There's no evidence that said Merck tried formulations to formulate aprepitant, those failed, crashed out of solution, and then they were stuck with fosaprepitant.

The evidence showed both drugs were made at the same time, 1993. And by the time of the priority date, CN '845 did change the state of analysis.

Fourth and final point --

JUDGE BRYSON: You've reached --

MR. ALY: I'm sorry?

JUDGE BRYSON: One minute on your final point, and then I'll have to stop you.

MR. ALY: A final point, Your Honor --

JUDGE BRYSON: [Inaudible].

MR. ALY: I'll do that, sure.

A final point, that as far as the various reasons to increase emulsifier level, counsel did not address or rebut the surface area increase that was shown that Dr. Rabinow testified about or the increase for particle size. And the complexation was one of several reasons that also Dr. Little himself agreed would be another reason to increase emulsifier levels.

So for these reasons, Your Honor, we believe judgment should be granted in favor of Fresenius Kabi.

JUDGE BRYSON: [Inaudible].

MR. ASHKENAZI: Your Honor, I'm sorry, I can't hear you right now.

JUDGE BRYSON: I'm sorry. I was just wrapping up saying, I thank both counsel for a very helpful presentation. I think this has been informative and quite useful.

I will try to get -- well, I think I will probably not be able to get something to you

very quickly. I'm going to be on vacation for several weeks, but after I get back, I will hope to have something for you.

I've already done some significant amount of spadework on this. But I think, both in light of your briefs and the arguments, I need to do some more thinking about the issues, and I will endeavor to do so.

I will -- after I adjourn here, I will stay on the line with the court reporter and -- in case he has any questions about case names or the names of any of the chemicals that were discussed, although I don't think there were many of them.

In any event, don't forget to provide us with the redactions to the transcript of the trial so that we can get that taken care of and then other than that, thank you for your help and we're adjourned.

MR. ALY: Thank you, Your Honor.

MR. ASHKENAZI: Thank you very much, Your Honor. And I hope you have a great vacation.

JUDGE BRYSON: Thank you.

(Off the record at 11:39 a.m.)

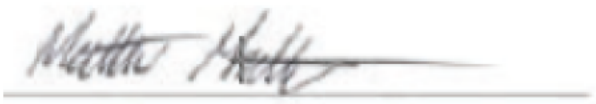
STATE OF MARYLAND)
ss:
COUNTY OF MONTGOMERY)

I, Matthew Goldstein, Notary Public within and for the State of Maryland, do hereby certify:

That I reported the proceedings in the within entitled matter, and that the within transcript is a true record of said proceedings.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 29th day of August, 2024.



Matthew Goldstein, RMR, CRR

A
a.m 1:14 92:23
able 9:3 46:8 91:25
absolute 20:3 21:9
absolutely 21:3
abstract 64:18
accommodation 10:6
accomplish 46:8
accurately 39:4
achieve 77:19
achieved 87:5
achieving 21:11
acid 32:2,5,8,10 32:14 64:23 84:25 85:2,7,13 85:15,21
acids 85:3
acknowledged 25:15
action 1:5 93:13
actual 75:18 82:22
add 27:17 32:23 75:23
added 32:2,12
adding 32:5 42:9
additional 43:15
address 14:1 21:7 23:14 24:23 28:11 41:4 57:13 60:8 86:9 91:8
addressed 24:5 34:16 36:18,21 37:1 57:5 59:19 72:17 82:20 86:22
addressing 20:15 20:22 53:17 57:8 81:12
adequately 50:8
adjourn 92:9
adjourned 92:18
adjuster 31:19
administering 41:18
administration 37:1 41:1 88:17
admits 65:15
advantages 40:23
adverse 34:11,18 35:3,4,7,25 36:9
advise 5:25
affect 40:15
aforesaid 88:16
Agarwal 19:10 19:20 75:1
agent 30:24 76:25
ago 55:18 61:19
agree 61:19 65:12 74:23
agreed 16:10 54:6 56:17 65:19 74:2 78:3 81:15 91:12
agreement 24:19
agrees 58:8
ahead 9:10 20:13 61:17 63:6 69:10 88:10
akin 46:2
Albano 10:9
Alcon 24:12
alert 41:19
alkali 83:22,23
allegations 36:17
Aller 89:21
allergic 34:15 36:12
allotted 6:6 9:20
altogether 25:10 26:3
Aly 3:12 8:7,11 8:15,16,18,25 9:11,19,22,25 13:24 14:3,14 14:16,20 15:5,8 15:10,12 19:6 19:15,19,24 20:10,14 23:21 23:24 25:2 28:9 30:24 31:3,6,13 31:17 32:16,18 32:20 33:12,18 33:21,23 36:6 36:14 39:17,21 41:24 42:2 48:7 55:6 69:11 70:6 71:10 82:7 86:5 86:6,8 88:6,9 88:11 90:25 91:3,5 92:19
amount 16:15,18 41:6 47:17 76:11,24 77:11 80:24 82:2 87:20 92:5
amounts 12:10 49:1 50:18 64:25 69:14 74:15 75:9 76:2 89:23
analogous 26:22 89:15
analysis 25:7 27:16,18 34:1 45:17 90:22
animals 25:9
answer 20:16 22:8 30:14 45:10
antagonist 12:24 45:25 53:23 54:2 55:21 56:19
antagonists 54:5 54:9
anybody 5:19 49:14
Anyway 6:5
Apologies 44:16
apples-to-apples 39:5
applicability 25:1
applicable 24:11 27:15
application 14:22 75:4 87:13
applied 28:6 42:8
apply 27:12 38:8 49:16
applying 89:24
appreciate 10:3
approach 12:17 12:25 20:20,21 20:24,25 28:12 28:15 32:7 35:16 38:12 46:6 54:2 57:18 59:6 61:11 62:19,24
approaches 25:22 60:6
approaching 57:14 61:21 65:1 71:21
appropriate 27:16
approval 82:10
approved 49:13
aprepitant 11:11 11:14 12:4,14 12:18,25 17:11 17:21 20:7,7,23 35:14,21 43:20 46:2 47:3 50:11 53:25 54:4,10 54:23,25 55:5,9 55:17 56:1,7,21 58:11,12,20,21 58:24 59:14 60:1,18 61:21 62:2,4,6,12,14 62:20 63:13,18 64:19,21 68:6 70:13 71:2,13 73:19,21 78:3 90:16
Arbutus 69:6
area 5:20 18:5 75:21 76:3 91:8
ARENT 3:16
ArentFox 8:7
argues 13:25
arguing 6:16 7:6
argument 7:22 14:10 20:19 24:12 42:11,21 69:21 71:12,15 72:19 81:24
arguments 5:1 92:6
arrived 30:3
ARSHT 3:4
art 12:24 13:3 16:22 17:3 18:20 25:5 26:22 29:9,17 29:22 30:1 38:9 38:24 39:4,5 40:7 46:10 47:5 49:15 52:2,16 53:11,21 57:15 57:17,20,23 58:3,5 62:19 69:22,24 71:8 76:8 80:8 85:18 86:25 89:5
article 15:5 35:15 39:23
articles 34:14
Ashkenazi 2:4 6:15 7:6,8,10 7:15,17,23,24 44:6,7,10,12,15 44:19,21 45:12 48:14 50:3 52:23 56:9 58:2 59:18 60:5 61:24 62:13,22 63:7 66:17,24 67:3,17,23 68:1 68:14 69:5,9,11 70:14,18,23 71:14,20 72:20 73:13,16 79:2,4 80:1 83:7 84:1 84:7,10,22,25 85:5,24 86:3 87:16 91:18

92:20
asked 5:7,13 27:22 51:16 54:14
asking 9:1
assert 83:8
asserted 10:13 11:6,23 43:24 45:21 55:1 63:25 68:12 76:15 85:19
asserting 12:1 84:13
assertion 34:6 82:18 83:19,21
assertions 36:17
asserts 47:19
assess 28:19
assessed 14:12
associated 34:14 34:24
assume 26:2 36:16 47:14 63:12,14
assuming 38:7
assumption 26:4
attention 63:12 77:25 86:18 88:25
attorneys 7:9,11
audio 44:17
August 1:13 93:18
authority 19:3
authors 64:6 80:16
authors' 80:22
automatically 32:15,16
available 18:2 58:15 75:21
Avenue 2:10
aware 6:3 18:14 67:20,24
awareness 6:4

B

back 39:14 51:3 52:21 53:20 60:11 61:18 70:25 84:15 86:5 92:2
back-and-forth 34:9
backwards 47:5 56:13
ball 70:20
Barr 57:6
barriers 57:16
based 13:11 16:21 67:1,3
bases 32:8
basic 27:2 32:2
basically 18:17 32:10
basing 70:8
basis 45:5 81:23 89:18
Bayer 57:7,7
behalf 2:2 3:10 10:4
believe 8:8 9:13 70:23 71:21 77:13 81:9 84:11 91:15
believes 83:22
benefit 86:23
best 19:3 30:22 56:8 67:9 73:8
better 59:1 88:15
big 42:4 45:13,14
bit 49:2,11 53:2 73:11 75:6 76:18 78:20
blends 51:2
blood 93:13
Bombardelli 19:21
bottom 64:14 68:2 83:11
bought 40:25
boxes 7:7
bread-and-but... 28:18
breakthrough 71:12
brick 12:15
brief 38:23 40:17 80:12 82:4
briefing 23:14 24:5 33:4 35:4 35:12,15 45:3 64:4
briefly 19:1 42:14
briefs 60:3 92:6
bright 25:12
bring 86:4
bringing 65:2
broad 65:7 66:13 68:5
broader 55:19 59:23 79:17
broadly 55:23
broke 39:13
BRYSON 1:11 5:1 6:17,21 7:13,16,20,25 8:10,16,19 9:16 9:21,24 13:23 14:9,15,17 15:3 15:7,9,11 19:1 19:11,17,23 20:4,12 23:20 23:22,25 28:8 30:21 31:2,4,8 31:14 32:13,17 32:19 33:10,14 33:20,22 36:3 36:13 39:13,20 41:19 42:1 44:5 44:9,11,13,18 45:11 48:5 50:2 52:22 55:15 57:4 59:17 60:4 61:18 62:10,16 63:5 66:14,21 67:1,13,19,25 68:13 69:3,7,10 70:11,16,19 71:6,15 72:15 73:12,15 78:25 79:3,24 83:5,25 84:3,8,20,23 85:2,23 86:1,4 88:6,10 90:24 91:1,4,17,20 92:22
built 67:6
burden 45:19 53:1,5,8 81:10
buyers 41:5

C

C 2:1 3:1,1 4:1,1
cake 85:14
call 6:10 8:6 24:7 25:16 52:6 88:25
called 23:6 30:13 38:22 40:16 87:4 88:14 89:5
calling 29:25
cap 23:3
care 92:16
careful 77:21
carefully 34:8
case 5:2 9:5 10:4 10:11,22 13:13 26:14 30:6 41:8 43:6 57:6,7,8 59:19 69:3 78:4 82:16,20 89:20 90:6 92:11,11
cases 55:23 57:5 87:12
categories 12:7 48:8
category 25:8
cause 36:4 80:25
caused 80:17
causes 84:13
causing 36:8 84:5
caution 20:17
cement 12:15 46:2 55:7 71:9 71:9
certain 21:3 24:17 45:24 69:15 80:24 84:18,19
certainly 7:1 24:16 37:15
certainty 20:3
certify 93:6,12
change 69:20,20 90:21
changed 11:21
changer 63:23
chapter 50:10
characteristics 55:4
characterize 55:23,25 56:6 57:9 58:1
characterized 57:22 71:11
chemical 38:4
chemicals 92:12
chemistry 38:3
Chicago 3:19
Chinese 14:18
choice 31:25,25
choices 68:11,11 68:18
choose 81:4 84:12
chosen 84:16
Chris 7:18
CHRISTOPH... 2:7
chunk 24:5
CINV 41:16
Cinvanti 40:25 47:2
circuit 57:4 68:24
cite 83:8
cited 60:2 69:4
cites 58:5
Civil 1:5
claim 13:19 30:2 41:14 69:1 83:3 83:12
claimed 43:14 53:16 83:9 85:19

claims 10:14 11:6 11:23 13:21 41:11,12 42:16 43:24 44:1 45:21 55:1 56:13 68:12 85:19
clamoring 35:9
clarification 9:13
class 17:20 54:9 75:20
classes 68:6
classic 86:20
classical 87:10
clear 33:6 45:20 46:17 47:25 51:16 53:4 60:11,17 65:16 69:21 73:18 75:2 76:4 80:23 81:11 82:5,6,20 83:13 85:12 89:7
clearly 50:19 82:10
Clinic 35:12 36:1
closest 39:4 40:6
closing 5:1 10:7
CN 10:13,14,21 11:1,3,8,9,22 12:2,16,23 13:2 13:7,10,25 14:4 14:11,12,21 16:22,24 17:7,8 18:2 20:18,24 21:16 22:9 23:21 27:19,23 27:25 28:7,25 29:23 30:15 31:19,20,24 36:18,21,22 37:1,3,14 38:9 39:7 41:9 42:9 46:15,18 47:12 47:15 50:13,19 52:18,25 53:12 58:16 59:8 63:19,22,25 64:5,15 65:6,9 65:10,19,25 66:4,7,16,17,18 67:16,20,24 68:2,19,19,23 72:3 73:17,23 74:1,4,7,12,12 74:14,16,20 76:7 78:4,6 84:17 87:13 88:3,13 89:4,5 89:14 90:21
co-counsel 8:7
co-emulsifier 10:24 68:8 85:8 85:10
coalescence 77:8
colleagues 7:5
column 83:4 87:3
combination 22:6 27:1 35:20 47:8 89:13
combinations 27:4
combine 11:3 13:7 53:7
come 5:23 15:4 20:18 29:11 47:7 48:23
comes 36:15 46:20 47:1 55:22 64:5 81:7 85:20
coming 20:19 29:25
commercial 37:17 40:18,18 60:16,25
common 10:19 35:16 50:16
commonality 20:21
commonly 33:1,9 60:12 87:24
compare 40:6
compared 39:3 88:15
comparison 39:6 39:22 40:1
compatibility 88:15
completely 47:23 48:20 51:13,14 89:17
complex 17:16 60:18,20 61:13 61:14,15 63:15 74:3
complexation 18:12,12 20:18 20:22 27:21 47:11,14 73:14 73:24 74:13,21 74:22 91:11
complexes 18:16 18:17 73:18,21 75:3
complexing 20:9
complexity 49:9 50:25
component 29:5 29:14 31:18 32:24
components 12:6 17:16 25:22 30:9,10 48:25 49:1 50:23 52:1 69:1 85:16 87:17
composition 14:11
compound 11:17
compounds 11:16 17:21,21 38:4
conceded 28:13
concentrate 82:13
concentration 77:4,11
concentrations 77:7
concept 47:13 48:15
concepts 47:6
concern 20:17
concerned 28:10
concerns 57:25
conclude 11:6 21:10,25 38:20 41:21 90:13
concluded 37:7
conclusion 41:7 42:2 43:21 80:18,20
conclusions 1:10 80:22
conditions 15:15
conduct 82:8
Conducted 1:12
conducting 8:12
confer 80:9
confidence 21:21
confidential 5:22 40:19
confines 56:2
confusion 34:7
conjecture 46:12
conjugate 32:8
conjunction 46:24
consider 51:15
considerable 24:5
consideration 37:18 38:17
considerations 11:5 30:10 34:4 41:11
consistent 13:20 87:11
consistently 76:15
consonant 31:10
constitute 24:20
construed 21:13
contain 46:18 54:17,21 63:3 65:20
contained 64:9 84:17
contemporary 89:14
content 82:9,15
contest 33:5
context 33:7 89:3 89:7
continue 87:21
continue- 78:24
continuum 22:23 25:11 48:18 51:19 52:3 79:12,14
contradict 82:18
contrast 65:6
controlled 40:22
convenience 10:7
conventional 49:4,6 51:19 52:6,7,17 79:18
converting 32:14
convincing 45:20 53:4 81:11
convincingly 63:17
Copying 40:16
correct 8:14,15 15:10 16:8 20:10 84:21,24 88:11
correctly 84:24
Corswant 23:17 78:17,22,25 79:9 86:13,15 86:25 87:9,13
cosolvents 60:8
cost 41:2
counsel 10:5 86:17 87:16 91:8,21
COUNTY 93:3
couple 50:15 78:2 80:1 81:8
course 21:9 25:2 28:25
court 1:1 5:16,23 10:2,8 37:21 44:21,24 92:10

crashed 90:17
crashes 71:3
create 46:6
credible 68:17 69:12
creek 72:14
criteria 82:24 89:10
critical 30:5 55:16
criticality 29:14 30:6 53:3,9,9 81:10
CRR 1:21 93:24
crystal 62:8 66:1 82:9,15
crystalline 55:10
crystallize 59:2
crystallized 62:8
crystals 43:20 46:3 55:13 82:11
cure 57:14
CURTIS 1:11

D

D 3:1 4:1
D.C 1:24 2:18 10:6
Daniel 4:3 8:4 77:13
dark 28:21
data 34:20,22 46:19 65:16,20 66:8
date 11:20,23 16:4 37:5 49:13 54:3 90:21
Daubert 37:22
day 41:4 45:22 93:18
days 66:2
deal 80:10
decisions 41:5
declines 77:6
deemed 13:3
defendant 1:8 3:10 8:1,24
defines 88:23
defining 86:19
definitely 36:9
definition 87:7
definitions 86:20 87:10
degree 24:9 27:8 40:13 53:14
degrees 48:10
Delaware 1:2 3:7 4:7 5:4
demonstrate 67:16
demonstrating 66:22
denying 45:24
departures 68:19
described 17:20 65:5 74:17
describes 55:11
description 11:7 42:14,15 43:25 82:25 83:17 88:24
design 11:16,17
detail 49:2,8
details 45:14,15
determine 73:6
development 52:17 54:15,17 61:12
difference 28:5 30:18 34:21 35:2 53:13,14 78:18
differences 25:9 28:1 34:12 40:13 48:10,11 81:20 85:17
different 12:6,9 19:14,15 22:24 24:8,15 25:9 26:3 29:21 32:23 35:20 38:4 47:24 48:3 48:25 51:1,8,13 51:14,25 58:4 62:16 72:25 73:2,3 75:4 79:13 86:9 87:17,18 89:22
difficult 46:4 55:5 56:22 59:22 60:19 63:15
difficulties 63:2
difficulty 59:25
DIGITAL 1:23
direct 32:7 54:14
directed 14:19 26:24,25
direction 15:18 18:8,22
directions 21:21 69:15
directly 66:15
disagrees 80:19
disclosed 86:15
disclosure 30:16 31:24
disclosures 88:3
discuss 11:3 22:3 61:6 82:7
discussed 24:8,10 27:23 63:9 64:3 77:9,12 80:11 92:12
discusses 86:25
discussing 80:8
discussion 61:19
dispute 13:13 30:11,19 31:18 41:16 56:16 78:2 80:16 82:16
disputed 16:17 21:1 28:12 30:13 45:2
distinct 34:17 48:3,21,25 49:19 78:18 85:11
distinction 27:4,6 48:8 50:22 72:16 78:15 79:10
distinctive 79:13
distinguished 42:17
District 1:1,2 5:3
divide 6:7
doing 8:17 16:1 36:10 61:23 65:4
Dr 11:15 13:6 15:22 16:16,19 17:14,17 18:11 18:14 19:7 20:15,20,22 21:3,24 22:8,13 22:25 23:9,12 25:7,15 26:14 27:5,15,18 28:13,17 29:10 29:16 30:25 31:22 32:4,20 33:12,24 34:1 34:16,16,22 35:1 36:7 37:7 37:20,23,25 39:25 40:2,10 42:7 43:9,18 46:13 50:10 51:17 54:6,12 55:3,6,9 56:17 58:7 61:6,6,10 61:16,25 62:3 63:25 65:9,15 65:19 67:8 71:2 71:24 74:2 77:9 77:22 78:3,12 79:13 80:13,19 81:15,19 82:18 86:16,17,21,22 89:1,2 91:9,12
dramatic 29:20
draws 78:18
drew 78:15
Drive 3:17
drug 10:23 17:11 18:6,19 31:1 35:8 50:8 75:7 75:23 76:1
drugs 18:16 68:6 75:4,20 90:19
due 5:10
dumping 17:10
dust 12:15,15 46:3 55:7 71:9 71:10

E

E 2:1,1 3:1,1,1 4:1,1,1
E80 64:22
earlier 21:16 50:24 71:1,25 78:20
easier 56:25
easy 60:22
eat 85:14
effect 88:19 90:9
effective 28:24 29:3
effectively 66:15 67:14 85:4
effects 37:9 41:1 46:1,1 53:23 56:19 81:6
efficient 6:2
efficiently 55:12
effort 10:9
efforts 11:15 67:10
egg 17:11 18:15 18:18 29:3 32:22 33:8 46:11,14,22 51:10 64:22 68:21 69:16 73:21 74:8
eight 12:12
either 36:2,9 41:21 89:19
element 42:23,24
eliminate 35:9
Emend 35:14

41:2 46:1 54:19
emetic 55:20
emphasize 26:1 42:3 52:13
emphasized 17:17
emulsifier 10:22 17:12 18:22 22:7 23:11 27:20,20 40:9 42:10 47:17 50:18,20 63:24 64:2,25 65:7,25 67:12 68:7 74:2 75:7,9 76:2,10 76:14,19,25 77:3,4,6,11,14 77:17,20 91:7 91:13
emulsifiers 51:2,2 51:6,8 74:18
emulsion 12:3,5,8 12:11,17,21 13:10 15:2 17:3 17:5 22:21 24:21 25:13 27:1 29:6 33:7 38:12 42:8 46:10,14 47:3 51:18,19 52:17 58:19,20 59:6 63:14 64:20 65:24 75:24,24 75:25 77:1,5,7 77:14 78:14 79:17 80:18 83:24 88:17,18 90:10
emulsions 12:12 22:18 23:16 24:9,10 25:6,7 25:22 26:16 27:1 33:2 34:3 38:15 48:2,9,17 49:4,6,7,16 50:12 52:7,8,18 54:1 58:12 60:12,13,22 61:7,8,13 62:5 62:14 63:19 75:20 78:3,7,19 79:10,19 87:14
encourage 45:8
encyclopedia 10:25
endeavor 92:8
energy 87:6
entire 8:12
entirely 7:23 13:19 15:25 48:3
entitled 93:9
entry 43:23
EP258 87:1
EP279 19:20 75:1
EP825 19:10
equal 37:12
equivalent 30:16
era 38:3
ESQUIRE 2:4,5 2:6,7,8,16 3:3 3:12,13,14,15 4:3
establish 71:17
established 20:25 70:12 88:19
ethanol 17:12,13 85:13
evaluate 82:15
evaporating 17:13
event 34:18 35:6 92:14
events 34:11 35:3 35:4,7 36:9
everybody 7:21 15:21 16:10 38:14 49:7 79:9
evidence 1:23 11:18 13:6 27:10 29:20 34:12,13,20,22 35:11 36:3,6,11 38:2,5,8,14,18 40:6,7,11,14,24 42:11,13 45:20 47:11 49:12,14 52:15 53:4 65:14 76:12 81:3,12 82:17 87:18,19 90:15 90:15,19
example 35:13 39:7,8,12,18,21 40:4 42:6,18 49:20 51:17 58:5,18 63:2 65:7,22 66:14 66:18 67:7,8,15 68:20 72:6 73:25 74:1,9,9 74:9 78:17 79:9 81:14,14 87:1 87:14 88:4,14 89:16
examples 12:12 17:2 18:13,20 20:16 39:9,15 39:17 47:15 53:10 65:10 70:3 74:4,7,17
excipient 12:10
excipients 87:18 88:1
exclusively 54:22 58:10
excuse 6:1
exemplified 87:3
exhibit 33:15,16 78:25
exhibits 19:4,9,9
exist 47:7 89:22
expectation 11:4 15:19 18:23,24 20:1 21:7,8,11 38:19,24 53:7 70:7
expected 40:11 66:6
experiments 88:20
expert 21:3
experts 13:15 33:25
explain 13:9 36:7 37:24
explained 13:6 15:22 17:14 18:2,11,15 21:4 21:16 22:14,25 23:9,12,17 26:15 27:19 28:17 29:2,10 29:16 30:25 31:22 32:4,21 55:3,9 61:25 63:18 76:19 77:22 81:19 89:3
explaining 88:12
explanation 17:25 62:3
explicitly 65:20 78:18 83:12
expressly 29:2
extent 24:18 70:21
extrapolate 24:13
extremely 46:4 56:22 68:5

F

face 40:8
facing 47:4
fact 13:25 23:15 41:1 46:8 60:7 60:12 65:15 77:2,21 80:11 81:24 82:9 88:18
factors 77:1
facts 1:10 45:24
failed 54:4 62:22 71:8 90:17
failure 37:18 38:14 59:13,13 63:8 70:8
fair 71:11
fairly 5:10 24:24
far 22:5 26:1,15 27:7 28:9 36:17 91:6
fault 24:2,2
favor 91:15
favorable 15:18 21:17
favored 55:10
FDA-approved 60:13 80:7
federal 57:4 68:24
Fell 33:2,18
fewer 46:1
field 24:19 25:6 76:6
final 90:23 91:1,3 91:6
Finally 33:1
find 22:15 62:1
finding 45:5
findings 1:10 43:24
fine 9:23 44:12 52:22 69:8
first 5:7,23 6:11 10:3 16:24 17:9 20:18,24 22:9 34:6 38:19 39:9 42:8 47:2 49:25 50:3,5 56:11 71:6 73:23 76:24 85:7 86:10 88:22
Firstly 50:7
fits 22:5
five 11:6 41:25 86:7
fix 6:21
fixated 63:19
flag 40:17
Fleischacker 2:6 7:8,18
flip 27:11
Floor 3:6
focus 10:18 16:14

16:15 17:18 18:10 37:19 45:1 56:24 57:23 58:23 59:7,15 60:7 61:4 69:15 73:7 76:17,23
focused 16:20 52:4 58:11,16 63:21 68:4 74:12 75:18 76:23
focuses 64:15
focusing 45:12 54:22 65:2
follow-up 84:4
following 29:24
foreign 32:23
forget 92:14
forgotten 9:17
form 14:24 17:15 18:16 19:4 32:9 46:3 55:12
formally 5:14
formed 32:10 66:1 75:24,25
forming 78:13,14
formulate 12:14 12:17 46:4 90:16
formulating 25:6
formulation 11:19 12:25 17:10 21:12 25:21 26:3 27:12,13 29:4,5 30:23 37:13,15 38:5,8 40:4 41:15,17 43:5 43:12,14 46:23 47:24 48:3 51:25 52:16 53:14 54:2,18 60:6,15 64:19 73:9
formulations 18:19 25:16,20 36:22,23 39:10 42:19 43:11 53:16 64:1 81:23 84:19 85:22 89:5 90:16
formulator 37:21 37:21,24 42:7
formulators 26:10
forth 13:18
fosaprep- 62:24
fosaprepitant 46:6 54:18,21 58:7,9,25 62:25 63:3 90:18
found 37:21 66:1 68:24 80:17
four 66:2 79:25 86:9
fourth 90:13,23
FOX 3:16
frame 22:20
free 9:5
Fresenius 1:7 3:10 5:3 6:8 8:5 8:13,21 13:25 43:1 45:2,19,23 46:9 47:18 49:5 52:5 53:1,5,24 58:5 60:21 63:17 64:7,15 68:4,16 70:10 73:16 75:18 76:15,23 81:22 82:8 83:14 91:16
Fresenius' 14:4 45:16 47:4 69:21 83:15
full 42:16
Fulton 57:7,7
function 30:21 89:12
fundamental 45:16
further 18:6 52:20 58:12 93:12

G

game 63:22 70:20
general 12:25 26:11 52:25 55:20
generally 77:22
gentleman's 10:9
genus 68:5
getting 31:9 44:17 61:18 76:2
give 9:1,5 33:10 33:14 35:18 39:15 51:17 69:18 80:5
given 5:15 37:23 53:15 57:13 70:1 74:21
gives 64:20 65:7
giving 15:19 35:18
gloss 77:2
go 6:23 9:10 20:12 27:25 35:23 39:14 40:20 45:7,13 47:21,23 49:25 51:3 52:10 56:20 57:12,19 58:11 59:9,15 60:11 61:2,12 61:17 63:5 69:10 74:5 76:20 77:17 78:9,20 82:1 86:5 88:10,21
goal 17:4 41:24 56:17 81:5
goes 55:13 70:25
going 10:18 16:12 17:6 27:5 31:16 32:14,22 34:19 35:16 44:24 49:21 50:21 52:10 56:20,24 58:10 58:23 59:2,5,7 59:14 61:11 68:20,20 69:13 71:1 72:2,6,8,8 72:9,9 73:6,7,8 73:10,10,17 74:10 77:18,21 80:10 82:11 84:12 85:3 87:2 88:22 92:1
Goldstein 1:21 93:5,24
Gonglun 77:12
good 6:12 8:3,18 8:19,19 19:17 22:3 44:19,20 54:24
granted 91:15
great 9:24 44:15 92:21
greater 46:10
GROUP 1:23
guarantee 21:5
guess 56:7,9
guidance 69:18

H

H 3:14
Hale 11:15 37:20 55:3,6,9 61:25 62:3 71:2,24
half 41:20
Han 42:7 67:8 81:19
hand 89:25 90:6 93:18
handle 6:3
handling 7:22
happen 22:1,1
happened 29:18 42:4 57:2
happening 34:18
happens 27:12
happy 45:9
hard 12:14
Hargreaves 63:9
Hastings 2:9 7:5 7:9,11 44:22
He'll 8:11
head-scratching 47:22
hear 44:12,13 46:12 48:6 72:14 82:7 91:19
heard 11:14 45:4 45:23 53:1 61:5 69:11 76:18 79:23
hearing 5:15,16 5:17 24:1
hearings 9:17
heating 14:25
heavy 10:14
Helen 3:14 8:9
Hello 8:16
help 18:5 48:12 72:9 92:17
helped 18:19
helpful 15:17 91:22
helping 10:9
helps 30:25
hemolysis 80:17
heretofore 12:13
hereunto 93:17
Heron 1:4 2:2 5:2 6:14 7:4 11:24 16:3 26:5 29:13 29:15,19 30:6 30:17 34:25 35:12 36:1 38:18,23 40:8 40:20 42:6 43:1 43:10,16 44:22 46:9 53:2 65:24
Heron's 10:17 18:25 19:25 21:2 23:14 33:4 33:24 42:11 53:8 83:16
high 15:1 16:25

17:2 27:24 50:8 50:18 64:25 66:15,19 67:11 75:9 77:6,10,17
higher 18:22,23 72:8 73:11 76:2 76:10,10,14 77:18,18,21 82:1
Hill 2:7 7:18
hindsight 10:18 10:20 16:21 45:18 47:6 56:11 57:1,22 62:21
Hingorani 38:10 38:11 58:18 60:8 72:5 76:7
Honor 6:12 7:2 7:10,24 8:3,15 9:12 10:1 14:3 14:14,20 20:10 22:4 25:2 27:14 30:8 34:5 43:22 44:4,7,10,16,20 45:6,9 46:18,21 47:2,23 48:18 49:3,11,20 50:15 51:4 52:19,24 53:17 56:10 58:2,12 59:18 60:2 61:5 61:25 62:13 63:4,7,12 64:4 64:12,14,24 65:12,23 66:6 66:25 67:4,12 67:18,23,24 68:5,12 70:14 70:25 71:14,20 72:10,14,21 73:11 74:6,19 74:25 75:12 76:4,16,22 78:1 78:9,11,16 79:5 79:22 80:2,14 81:3,7 82:3,19 83:1,7,13 84:1 84:7,11 85:1,6 85:17,20 86:8 88:25 91:3,14 91:18 92:19,21
Honor's 10:5
hope 9:2 92:2,21
hour 6:7
HS 88:15
huge 68:7
human 70:1
humans 46:5,7 53:15
hydroxide 32:6
hypersensitivity 34:10,15,21,23 36:12 37:10
hypotheses 47:10 80:20

I

idea 47:9
identified 52:2 58:13 62:10 66:3
identify 51:20 61:20
ignore 10:21 52:10 59:25 63:1 64:9 80:21 85:16
ignores 90:14
III 17:20 75:20
Illinois 3:19
illness 57:15
impermissible 45:18
implemented 5:9
implementing 30:1
imply 43:11
important 11:8 13:14 24:25 25:14 29:4,5 48:5 69:24 76:19,25
importantly 29:1 72:10 74:19
Imron 3:12 8:7
inapplicable 89:18
Inaudible 91:4 91:17
include 20:6 42:16
included 25:8 64:1 67:11
including 7:5 41:9 88:3
incorporating 24:21,21
increase 18:6,8 62:1 63:23 76:14 81:25 82:1 91:7,9,10 91:13
increased 21:5 40:9 42:10 71:17
increasing 18:5 21:4,22 23:2 40:9 76:1 77:16 77:20
indicated 62:19
indication 67:14
indicia 53:18 81:12 82:4
individual 55:11
infected 45:17
influence 77:1
influencing 7:7
inform 52:16
information 13:8 14:5,24 15:18 16:7,9 21:18 23:1 40:19 58:14 63:1 64:8 64:9 67:5
informative 91:23
infringed 44:2
infringement 41:22 44:25 45:3 82:6
ingredient 69:14
ingredients 46:24 64:20 69:15,19 72:25 73:2,3 77:23 81:17
inherency 43:5,7
inherent 43:13
inherently 32:10 32:16
inhibitors 56:4
initial 65:5
inject 47:6
injectable 11:12 12:4,17 51:7 54:17 87:25
injection 34:10 34:11,17 35:3,4 35:6,13,18,21 35:24 36:14 37:10
injection-site 35:10,17,25 36:4,8
input 87:6
inquiry 55:19
Insight 59:19
insoluble 55:7
instability 77:7 77:20
instances 84:18
intended 67:15
interactions 18:18
interactivity 68:25
interdependent 73:1
interested 54:8,8 93:14
interesting 65:23
interface 17:23 47:18
interposing 9:4
interpreted 37:25
interrupt 13:23 19:2 20:4 23:22
intravenous 88:17
introduces 35:24
invalid 10:12 43:24
invalidate 8:23
invalidity 8:22 45:1
invention 29:25 56:13
inventions 53:16
inventor 15:13
inventor's 56:12 56:12
inventors 13:16 42:12 59:15 67:4
inventors' 67:4
involved 43:23
Isaac 2:4 7:5 44:21
issue 8:22 30:5 36:25 55:22,22 57:24 59:19 71:24 81:2
issued 11:22 37:3
issues 57:25 58:4 92:7
items 24:7 26:23
IV 35:14 41:2 45:25 46:1,4,7 47:3 53:22 54:18,19 56:18 56:23 58:21 59:4,14 61:12 62:2 63:3 71:4 75:2,3,3

J

Jenkins 4:4 8:5
Jeremy 3:3 6:13 7:3
Ji 3:14 8:9
job 28:18
joined 7:4
JTX 79:2
JTX1.18 83:3
JTX1.8 83:4

JTX105 61:2
JTX105.25 60:10
JTX110 79:3 86:12
JTX112 33:3,18
JTX113 17:19
JTX113.9 75:16
JTX114 19:20
JTX115 15:13 21:19 64:13
JTX21 38:12
JTX67 19:20
JTX71 11:9 64:14 68:3
JTX74 19:21
JTX76 33:3,19
JTX79 77:13
JTX88 33:3,6,21
JTX91 29:7 76:20
JTX93 22:5 49:22 51:3 87:22 88:9
JTX93.11 87:23
JTX93.9 88:21
JUDGE 1:11 5:1 6:17,21 7:13,16 7:20,25 8:10,16 8:19 9:16,21,24 13:23 14:9,15 14:17 15:3,7,9 15:11 19:1,11 19:17,23 20:4 20:12 23:20,22 23:25 28:8 30:21 31:2,4,8 31:14 32:13,17 32:19 33:10,14 33:20,22 36:3 36:13 39:13,20 41:19 42:1 44:5 44:9,11,13,18 45:11 48:5 50:2 52:22 55:15 57:4 59:17 60:4 61:18 62:10,16 63:5 66:14,21 67:1,13,19,25 68:13 69:3,7,10 70:11,16,19 71:6,15 72:15 73:12,15 78:25 79:3,24 83:5,25 84:3,8,20,23 85:2,23 86:1,4 88:6,10 90:24 91:1,4,17,20 92:22
judgment 82:21 91:15
Julie 3:15 8:9
Jumaa 33:2,6,21 33:25 80:23
jump 70:5
Justin 2:6 7:18

K

K 14:18,22 15:3 15:16 16:2,12 16:13 46:21
Kabi 1:7 3:10 5:3 8:5 91:16
Kabi's 43:1
Kamantz 60:10
Karavas 58:6
Karthik 2:16 7:17
Kasaraneni 2:16 7:17,18
Katzenstein 4:4 8:4
KE 15:2 16:5 21:20 64:8 90:4
keep 12:21 31:16 77:18
Kevin 3:13 8:8
key 33:4 46:11 71:5
Khan 29:1,7 76:17,18,23
kind 24:9,15 25:9 26:3 27:9 48:11 53:13 57:5
kinds 12:15 38:4
knew 28:25
know 9:8,19 13:3 20:17 23:1 28:22 30:20,22 31:8,18 39:22 45:6 57:4 59:3 60:15 61:11 72:3,4 73:7 79:10,17 82:19
knowing 52:23 58:24 80:5,5
knowledge 13:8 18:11 50:17 67:6
known 21:1 23:8 28:23 29:4,16 50:18 81:1 89:23
Kruse 2:8 7:19

L

L-I-U 19:13 22:5
lab 40:3
label 35:2
lack 24:19 43:25
large 75:21
largely 9:3 55:7
lattice 55:14
law 82:20
lead 15:13 62:14 77:20
leading 8:8,11
lecithin 16:15,18 16:21,25 17:4 17:12,18 18:8 18:15,18 20:9 21:4,18,22 23:2 26:12,18 28:23 29:3,17 46:11 46:14,16,23 51:11 64:22 68:21 69:16 73:22 74:8 82:2 89:12
left 78:23
left-hand 61:4
lended 59:22
length 64:3
let's 6:5 8:23 48:14 49:10 50:15 59:9 60:10 63:12,13 69:21 73:18 76:4 80:23
level 11:17 23:11 25:18 49:8,9 89:12 91:7
levels 16:25 17:3 17:18 18:9,22 21:18 26:6 27:24 91:13
lifting 10:14
light 92:6
limit 21:6 22:10 68:21
limitation 55:1
limitations 13:19
line 25:12 50:4,4 50:5 83:4 92:10
lines 89:3
linked 35:5
lip 64:7
list 7:14 30:15 51:5 88:1
listed 61:8
listening 34:8
literature 49:16
little 21:3,24 23:12 25:15 27:5 28:13 29:16 33:12,24 37:23,25 43:9 43:18 49:2,10 50:10,24 53:2 53:19 61:6,10 64:2 65:11 75:6 76:18 77:22 78:20 79:25 86:17,22 91:12
Little's 40:2 82:18
Liu 19:13 22:3,13 22:16,17,24 23:4,10,13 24:8 24:14 25:1 27:15,17 41:9 49:18,18,22 50:6 51:4 52:25 78:2 87:23 88:6 88:8,21 89:15 89:17
LLC 1:7 3:11 5:3
LLP 2:9 4:4
load 75:20
loading 75:22,25
localized 34:17
long 12:21 28:14
long-felt 34:7 35:9 36:2,16,18 37:3,8
look 10:21 13:2 13:16 15:14 16:18 22:14 26:6,7,10 28:19 29:19 40:7 42:12 43:20 47:5 49:15,18 49:22 50:21,22 51:4,7 54:25 57:15 60:9,10 65:6 66:12 68:1 72:22,23 73:1,5 73:20,25 74:4 75:14,16 78:12 78:17 81:19 82:14 88:22
looked 11:14 17:7 17:7 22:9,13 33:2 73:2 76:13
looking 12:23 16:21 23:18 27:25 28:7,25 29:9 43:3 47:14 54:20 57:22 59:23 63:18 67:2 73:17 86:15 87:22 89:21
looks 49:7
lot 11:18 55:22 75:12

low 77:24
lower 83:19
Ls 31:7

M

M 1:24 2:17
magnification 43:7
maintain 72:2,13
maintained 15:16
making 12:5,24 24:12 25:22 26:25 33:24 52:9 62:4,6 63:3 72:19
manageable 37:11
manual 26:9,9
Mark 2:5 7:18
market 3:5 41:3 47:3
Markman 34:16 37:7
marriage 93:14
Maryland 93:1,6
match 16:4
materials 37:25
matter 6:3 27:8,9 28:4 38:17 45:22 72:9 73:4 81:22 93:9,15
Matthew 1:21 93:5,24
Mayo 35:12,25
mean 14:8 52:9
means 43:6 69:24
measurement 15:16
mechanical 87:6
mechanism 18:3
medically 37:10
medicinal 38:3
meet 21:22
meets 21:12,13
member 5:12,25
members 5:25
mention 33:25 51:9 78:1 79:22
mentioned 22:4 47:12 50:23 55:18 60:7 78:19
mentions 73:23
Merck 11:17 38:5 46:5 54:3 61:19 76:6 90:14,15
Merck's 37:19
met 69:18 81:10
meter 81:20
method 41:15,17 61:21
micro- 80:5
microemulsific... 87:4
microemulsion 22:20 23:13 24:18 25:13 26:17 48:15,16 49:13,15 51:20 52:6,16 78:14 86:24 87:5,7,8 89:8,10
microemulsion... 86:10
microemulsions 22:17 23:15 24:6,22 25:16 47:24 48:2,9,23 49:9 50:7,16,22 51:1,7 52:8 61:7 78:5,8,19 79:11,19 80:6,7 87:14,25 88:23 89:6
microfluidizer 25:17
microscope 43:3
microscopic 25:18 42:25
microscopy 42:24 43:18
mid-1990s 11:16 11:19
minimal 45:25 53:23 56:19 81:5
minimum 26:22
minute 76:17 91:1
minutes 9:9,14 9:22 41:20,25 44:6,25 66:11 79:25 86:7
misconstrue 83:14
missed 39:13 69:4
missing 70:16,20
misspoke 50:24
mistake 52:5,9
misunderstand 19:12
mix 16:4
model 85:22
Moderna 68:25 69:5,7
modification 81:16
modifier 81:2 85:9
molecule 46:4 59:21,22 60:18
molecules 55:11
moment 13:24 53:21 55:18 61:19 72:23 73:14 75:12,14
MONTGOME... 93:3
morning 6:13 8:3 8:18,19 44:20
Morris 3:4 6:13 7:3
motivate 69:13
motivation 11:3 13:7 18:8 53:7 56:17 59:24
motivations 20:1
move 30:8,9 40:18 46:5 52:20 62:23
moved 54:4
moving 28:2 34:4
multiphase 72:17
multiple 73:2

N

N 2:1 3:1,1,1 4:1 4:1,1
naked-eye 43:17 43:19
named 13:16 31:21
names 92:11,12
nanometers 88:24 89:9
narrowly 58:15 59:15
natural 23:7 32:24
naturally 22:10
nature 5:16
near 49:8 75:7
necessarily 14:13
necessary 56:1 71:17 75:19
need 16:5 34:7,8 35:9 36:2,16,18 37:3,8 45:24 53:22 69:23 76:9 81:9,25 82:1,1 90:11 92:6
needed 42:24
needle 34:19
needs 69:18
neither 17:22 21:6
Nelson 3:13 8:9
never 30:13
new 2:11,11 20:19 29:25 42:7 47:6
Nichols 3:4 6:13 7:3
night-and-day 28:5
NK-1 12:24 45:25 53:22 54:1,5,8 55:21 56:3,18
noninfringement 11:7 42:15,22 45:5
nonobvious 69:2
North 3:5
Notary 93:5
note 51:9
notebook 40:3
notes 5:6
number 7:11 9:9 25:5,24,25 29:15 30:7 56:22 58:4,23 59:5 65:2 68:11 74:7 79:1
numbers 33:15 33:17
NW 1:24 2:17

O

O 3:1 4:1
objective 45:24 53:18 81:12 82:4
observations 43:18,20
obtain 12:3 28:20
obtained 11:25
obvious 10:12 15:25 31:23,25 41:12,13,17 43:25 45:21 47:7 57:19 69:2
obviously 78:13
obviousness 10:13 11:5 40:15 41:7,8 42:3,13 45:13 45:17 53:4 55:23 81:11 83:21
occurred 42:5
occurs 77:7
Oh 6:20 9:16

15:7 19:17 31:8 52:3 76:9 77:17 79:3 83:16
oil 10:23 17:22,24 27:2,4 50:7,11 52:7 55:2 64:21
oil-in-water 49:5 52:7 61:7,8,13 79:19
okay 7:13,20 8:1 8:10,20 9:16 15:7,11 19:17 19:23 20:12 28:8 31:15 33:22 36:13 39:20,20 42:1 44:18,24 59:17 67:21,25 69:7,8 72:20 73:6,12 80:1 83:25 85:23
oleate 30:11,19 31:17,23 32:7,9 32:9,21 33:1,5 33:7 68:22 69:16 80:15,17 80:25 81:1,2 84:5,6,12,13,16 84:18,23
oleate's 34:2
oleates 85:3
oleic 32:2,5,8,10 32:14,15 64:22 84:25 85:2,3,7 85:13,15,21
once 12:20 13:2 18:1 20:4
opening 38:22
opinion 39:25
opportunity 9:2 37:23
opposed 35:18 48:11
optimal 46:23 64:19 73:8
optimism 15:19
optimization 10:16 11:25 12:22 15:23 16:1,19 22:6,12 28:10,11 30:4,5 46:22 68:17 71:16
optimize 13:11 14:7 46:21 69:23 73:9,10 90:5
optimized 46:16 64:6 72:24 90:11
optimizing 28:17 28:23 29:9,22 29:24 65:2 90:3 90:3,4
option 47:5
options 30:16 58:17
oral 35:14,22
orally 35:19
order 9:14 33:3 61:11 62:1 75:20
ordered 55:14
ordinary 89:4
osmolality 30:25 31:2,3,5,6,11 31:13
osmolarity 31:5
outcome 93:15
overlap 25:19
overlapped 89:11
overlapping 22:21 23:16 48:10 87:15,20
overlaps 88:2,13
owner 10:19

P

P 2:1,1 3:1,1 4:1 4:1
page 49:23 51:3 61:3 64:14 68:3 76:20 79:5 89:2
pages 80:12
paint 60:21
pallor 36:10
paragraph 76:22 86:19,21 87:2
parallel 23:19
parameter 14:8
parameters 29:11
Park 2:10
parse 72:16
part 22:17 23:15 62:11 70:12,22 70:24
participate 5:14 5:14
particle 88:24 89:11,12 91:10
particles 25:18 43:1
particular 10:11 13:1 18:15 20:23 21:15 23:6 29:6,14,23 31:20 41:6 55:22 57:14 69:19 86:14
parties 5:7 45:7 93:13
parts 58:23
party 8:21,22
patent 8:23 10:19 13:21 14:18,21 15:9 30:16 37:5 37:5 39:18,18 39:24 41:12,15 42:17,23 44:1 83:3 84:6,9
patented 56:13
patents 10:12 11:25 39:10,22
patents-in-suit 53:11 65:23
pathways 57:16
patients 35:23
Paul 2:9 7:5,9,11 44:22
pays 64:7
PDX4-4 74:5
PDX5- 83:2
PDX5-1 64:11 66:10
PDX5-3 78:21,22
PEG 74:10
people 5:17 23:18 25:15 26:12 31:6 48:1 52:5 58:3,4 59:10 79:18
percent 17:1,4 21:18 22:9,11 23:2,5,10 26:12 26:18 27:19 28:2,3 30:2 35:7 46:11,14 46:16,22 63:24 64:2,21,21,22 65:3,8,11,25 66:20 67:15 68:8,9,21 69:16 72:6 73:9 74:1 74:2 75:10 77:13,14,15,15 80:6 90:2
perfectly 9:22 44:14
period 53:15 70:3 71:8,24
permission 5:13
person 52:14 89:4
pertinent 37:4
pH 31:19 32:2,6 32:13 39:6,8,10 39:24 40:4 66:2 81:2,15,20 83:10,19 85:9
Pharmaceuticals 57:6
phase 50:7
phases 17:24 27:2
phospholipid 23:5 32:22 73:21
phospholipids 23:6 33:8 51:10
phrases 12:16
pHs 39:16 42:17
physical 13:18 55:4
physically 13:20 21:14 42:18,23 43:13
pick 69:16
picking 85:12
picture 45:14,14 60:21
piece 52:2,14
pile 55:12
place 22:3 38:19
plaintiff 1:5 2:2 6:11 44:22
plan 9:14 11:2,6
please 10:2 44:21 61:3 64:11 66:10 76:21 79:21 83:1,2
point 5:12 11:13 11:20,21 18:10 21:1 22:19 24:17 25:5,23 25:25 26:5,21 33:4,23 35:11 39:14 40:17 41:14 43:9 49:21 50:9 51:12 60:12 63:20 70:6 71:18 72:21 74:11 77:16 80:15 81:1 84:10,17 86:11 87:9 89:10 90:1 90:7,13,23 91:2 91:3,6
pointed 21:20 46:9,21 65:13 86:17
pointing 77:10
points 18:21 20:15 43:16 45:14 50:16

56:10 80:2 81:9 85:6 86:10 90:8
poloxamer 74:8
polysorbate 34:14,24 35:5 36:10,20,23,24 37:13 54:18,22 63:4 74:9 88:4
polysorbates 88:3
poorly 55:1
portion 5:23 64:15 68:4 75:17 78:12 79:6 83:11
portions 72:17,18
POSA 10:15 12:13 13:3,5,9 13:9,14,16 15:22 16:14,18 16:20,23 17:7 17:18 18:1,7,11 18:14 22:7,10 22:14 23:1 26:6 27:25 28:22,24 29:8 30:3 32:5 47:9,13 50:19 52:9 53:24 54:7 54:20,24 56:18 58:8,14 59:6,24 62:25 63:13,14 63:18,21 66:6,8 68:10,18 69:13 73:17,20 80:21 81:3 83:21 84:11,12,15
POSA's 28:16,18
POSAs 54:8
position 10:12,17 10:20 14:4 26:4
positive 14:24 21:21
possession 42:20
possible 57:13 77:24
possibly 48:20
post 75:20
post-trial 45:3
posting 5:11
potential 35:24
preassembled 11:1
precise 14:21 22:22 26:15
predict 20:3
preferred 36:23
prepared 5:11
preposterous 83:10,20
prescreening 65:4
present 5:15 7:16 9:5 49:17
presentation 8:8 8:11,12 9:2 11:2 45:1,7 52:21 91:22
previous 64:6 73:6
pricing 40:21 41:5
primarily 37:20
prior 16:22 17:3 18:20 29:9,17 29:22 30:1 38:24 39:4,4 40:6 46:10 47:5 52:2 53:11 57:15,17,20,23 58:3,5 62:18 69:22,24 71:8 76:8 80:8 85:18 86:25
priority 11:20,22 37:5 49:13 54:3 90:21
pro-drug 46:6 62:24
probably 74:19 91:25
problem 7:1 11:10,11 26:24 28:11 34:21 45:16 53:24 55:16,20,24,25 56:6,15 57:5,10 58:1,22 59:3,20 61:20,22 62:11 62:18,20 70:22 70:24,24 71:1 72:17 80:25
problematic 36:11 84:9
problems 41:4 52:24,24 57:8 84:5,14
procedure 17:8
proceed 9:23
proceeding 5:24
proceedings 93:8 93:10
process 10:10
product 15:1 40:22 43:2 60:16 71:4 82:11
products 23:7 61:1 75:3
project 42:4
promising 90:9
pronounce 74:10
propensity 46:3
proper 71:21
properties 43:6 43:11 46:2 49:20 59:1,21 59:25 60:19 72:22 81:8
property 43:13
proposed 57:20
proposition 19:5 19:7
prove 53:2,3,6,9 83:17
provide 5:8 38:23 92:14
provided 34:2 36:7 72:4 79:15 81:22 82:17
provides 64:8
proving 45:20 81:11 82:9
public 5:13,16,24 6:1,4 93:5
publication 14:19
publish 63:8
published 38:6 38:10,11 47:20 76:5
pull 49:21,23,24 54:7,11 55:8 64:11 65:18 66:10 83:1
pulled 10:25
pure 62:21
purpose 16:18 31:9 41:18 62:9
pursue 16:11 37:14,16
pursued 13:14 15:23
pursuing 16:12
put 11:11 17:11 42:6 45:19 47:1 56:1,7,8 59:3 81:17 83:2
puts 49:5

Q

question 9:4 12:19,23 13:1 14:2 20:14 22:8 24:4,24,25 27:22 37:4 39:2 46:17 48:1,6 54:13,13 56:8 57:19 59:23 62:17,25 70:15 72:1,11 78:6 84:4
questions 9:1 45:8 52:20 92:11
quick 5:5 80:15 81:8
quickly 77:2,5,6 80:2 92:1
quite 15:20 91:23

R

R 2:1,16 3:1 4:1
Rabinow 13:6 15:22 16:16,19 17:14,17 18:11 18:14 19:7 20:15,20,22 22:8,13,25 23:9 26:14 27:18 28:17 29:10 30:25 31:22 32:4,20 34:1 40:10 46:13 51:17 54:6,12 56:17 58:7 61:6 61:16 63:25 65:9,15,19 74:2 77:9 78:3,12 79:13 80:19 81:15 86:16,21 89:1 91:9
Rabinow's 25:7 27:15 39:25 80:13 89:2
raise 32:6
range 23:11 42:16 50:19 55:19 56:3 65:3 65:7,8 66:3,12 66:15,19,22,23 67:12 68:2 72:25 74:21 83:9,12,22,23
ranges 12:9 53:3 66:13 68:7 73:3 74:17 83:19
rapid 77:8
rarely 60:15,25
ratio 75:5,8
ratios 17:1 48:25
re-creation 81:14
reached 84:2 90:24
reaction 34:15
reactions 34:11 35:10,17,25 36:5,12

readily 55:11 59:1
ready 9:23
real-world 29:19 42:6,13
realize 73:20
realized 6:18
really 10:3 16:17 23:3 24:13 45:1 45:2,4,8 55:10 55:15 69:1,12 69:17,23 76:19
reason 17:3,17 21:10,25 22:25 26:19 28:6 32:20 37:14,15 37:16 91:12
reasonable 11:3 15:19 18:24 20:1 21:7,8,9 21:11 53:7 70:7
reasons 13:22 16:20 18:21 21:15 22:15 23:9 27:14 38:13 40:25 54:24 91:7,11 91:14
rebut 86:22 91:8
rebuttal 9:7 41:25
rec- 74:14
recall 84:24
receptor 45:25 54:2,5,9 56:18
recited 33:17
recognition 54:19 59:20
recognize 18:1
recognized 17:8 87:10
recognizing 28:1 59:12 60:25
reconcile 73:19
reconciled 47:11 47:13 74:13,15 74:16 83:20
record 6:18 19:19 92:23 93:10
redact 40:21
redactions 5:8,10 92:15
redline 29:16
refer 40:20
reference 10:23 10:24 12:2 17:19,20 19:10 19:13,14,15,21 21:16 22:4,14 22:15 23:10 26:11,17 27:15 29:7 32:1,2 38:11 46:13 50:11 51:10 52:11 58:6 63:10 64:5,13 64:18 76:17 77:10,12 86:13 86:14,16 87:5 87:23 88:8 89:9 89:15,15 90:5
referenced 36:1 68:22 74:24 80:12 84:20,24
references 18:13 20:6 24:10 26:25 41:10 58:13 59:8,10 60:14 75:1 76:8 78:17
referencing 87:12
referred 55:6 61:10
referring 19:8 88:18 89:2
refers 87:22
refined 10:15
reflecting 22:22
regarding 18:12 36:18 38:3
regardless 53:9
reign 9:5
related 20:8 22:23 25:5 31:7 31:9 75:4 93:12
relation 76:3
relationship 47:17
relied 34:22 43:5 43:9,17
relies 43:10
remain 15:2
remained 12:19
remains 27:18 47:2
Remington's-t... 26:9
remote 10:8
Remotely 1:12
render 69:1
replicate 66:18
replicated 39:4
report 39:24 40:1
reported 1:21 21:16 35:7 93:8
reporter 10:8 92:10
representing 6:10
requirement 82:22
reserve 9:15 41:24 44:3
resist 9:4
respect 8:21 24:25 55:21 60:5 78:1 80:3 80:14 81:13 82:3,25
respond 25:3
responded 26:5 54:16
response 14:9 18:25 19:25 21:2,24 23:12 29:13 33:12 40:17 54:12,13
rest 44:3
restrain 8:25
result 28:24 29:2 38:20,25
results 10:17 28:15,20 29:12 38:16 39:2,3 40:5,9,15
reviewing 35:15
right 6:5,23 7:20 7:25 9:21 14:15 14:16 15:18 19:18 20:7,9,12 31:4,9,10,11,12 31:13 32:19 33:16,20,22 45:11 57:18 60:4 62:21 63:5 66:2,19 68:13 70:17,22 71:7 72:25 83:10 85:2,4,13 91:19
right-hand 79:7
RMR 1:21 93:24
Roeland 34:16,22 35:1 36:7
roll 6:10 7:14
routine 10:16 11:24 12:22 16:1,19 22:6,11 28:9,11,14,15 30:4 68:16 71:16
routineness 28:12
run 7:13 29:11
Russell 2:5 7:19

S

S 2:1,4 3:1 4:1
safe 23:8 26:6,13 26:18 33:6,7 89:23
safety 23:2 26:1 26:19 34:2 80:3 80:3
sales 40:22
salt 32:9 62:4,6
satisfied 45:19 82:24
satisfies 71:19
save 9:7 41:21
saw 40:16 54:3 56:16 60:4 85:17
saying 8:10 16:4 22:1 35:22 40:8 58:14 64:24 67:21 76:24 77:19 83:18 84:15 91:21
says 29:19 31:20 49:18 50:7 52:3 53:24 68:7 72:24 73:5,16 75:15,23 76:14 89:17
schedule 10:5
Schiff 3:16 8:7
science 52:10
scope 24:20,20 57:9,10 62:17
screen 6:15 7:7 49:24 50:1 86:18 87:21
sea 58:14
second 5:12 6:17 17:17 23:23 37:17 44:8,16 49:14 50:4,5 73:25 90:1
second-to-last 61:9
second-to-most 61:14
secondary 11:4 30:9 34:4 37:17 38:16 41:11
seconds 44:8
Section 65:5
see 6:15 7:7 18:1 30:12 38:13 52:18 54:15,16 55:8 58:3,4,6 60:14,24 61:6 64:17 67:10 70:3 73:8 74:6 77:3 78:23 83:10 86:18,23

89:5
seeing 79:8
seek 82:10
seeking 8:23
seen 66:9
select 69:13,14
sense 35:16 51:21 51:23 62:21 87:20
sensitive 5:22
sentence 50:5 76:24 88:22
separate 85:10
separately 48:20
September 11:23 37:6
serve 30:22
service 64:7
set 18:23 29:10 50:19 93:17
sets 13:18
setting 37:22
seven 41:20
share 47:9
sharing 86:12 87:21
shift 53:1 63:11
shifting 32:25
shooting 28:21
short 9:9 30:14 71:23
shortly 62:8
show 11:5 12:2 18:13 20:25 21:21 25:12 30:6,17 38:25 42:9 81:9 82:23 90:9
showed 10:13 12:3,4,6,9,16 13:6 15:16 23:4 23:7 27:10 29:13,15,20 35:8 39:10 40:3 40:11 42:11 63:15 80:24 90:19
showing 14:6 15:1 16:22 26:17,23 27:20 34:2 42:20,25 59:10 63:23 83:15
shown 37:9 39:18 52:15 53:10 57:15 66:22,23 80:21 81:22 91:9
shows 40:9 67:18 72:6 82:13
sic 62:8
side 6:6,7,10 7:21 9:14 37:9 40:25 44:17 46:1,1 53:23 56:19 61:5 78:23 79:7 81:5
sides 10:4
significant 92:4
similar 57:2
similarity 25:21 43:10
simple 60:23 83:8
simpler 61:12
simplest 56:14
simply 20:2 33:23 37:7 39:25 42:22 45:19 47:1,20 48:10 49:17 57:12 77:17 85:24
single 46:10,13 51:17 52:2,14 52:14 73:24
site 34:10,11,18 35:3,4,6 36:14 37:10
situation 89:24
size 47:18 88:24 89:8,10,11,12 91:10
skill 89:4
skin 34:19
small 28:1
Smith 4:4 8:4
snaps 48:22 51:25
sodium 30:11,19 31:17,23 32:5,7 32:9,9,11,21 33:1,5,6 34:2 68:22 69:16 80:14,17,25 81:1,2 84:5,5 84:12,13,16,18 84:23
solubility 50:8 62:2 72:2
solubilize 18:6 62:12 70:13 71:2,8,13 72:7
solubilized 71:7 71:23,23 72:5 72:22
solubilizing 61:21 61:24 62:14,20 72:11
soluble 17:22,23 50:11 55:2 71:3
solution 11:12,14 12:4,18 55:17 56:2,7 57:14,17 57:20,21 62:7 90:17
solutions 56:25
solve 53:24 55:20 56:14
solved 11:9,10 55:16 56:6 58:1 59:20 70:21,24
somebody 16:5 18:1 38:24 52:15
soon 5:10
soonly 62:7
sorry 6:25 19:15 23:24 33:14 49:9,23,25 61:17 72:14 83:2 84:22 85:18 90:25 91:18,20
sort 24:6 48:22 48:23
sorts 25:8
sound 31:5
South 3:17
soybean 64:21
spadework 92:5
speaking 7:12
specific 49:11 64:20 69:14 78:7
specifically 18:9 30:4 34:3 79:5 81:21 88:4
specification 42:17 82:10 83:9,11,16,16
spend 44:25 86:11
Sperling 2:5 7:19
ss 93:2
stability 13:15,19 14:5,6,7,23,24 15:14 18:9,23 21:5,19 27:21 27:24 28:13 29:6 40:10 42:10 46:18 47:18 66:7 69:23 70:17 71:17 72:13 76:3,15 77:5,19 80:4,10 82:1 90:8,10,11
stability-orient... 16:7,9
stabilize 18:19
stable 12:19 13:20 14:1,11 21:12,14 27:6 39:10 40:13 42:19,23 43:13 48:17,19,24 51:24 53:15 63:24 64:1 65:10,13,14,15 66:7,9 69:22 70:2 81:23,25
stacking 55:13
stage 71:6
standard 14:12 14:17 15:4 16:2 16:13 28:20 49:6 69:17
standards 13:11 15:20 21:23
start 6:8,24 8:24 24:1 48:14 63:17 86:12
started 5:5 6:5,9 43:22
starting 29:23 43:21 63:20
state 12:24 13:3 38:9 53:21 78:11 83:12 90:21 93:1,6
stated 47:20
statement 71:12
STATES 1:1
stay 92:10
step 16:11 17:9,9 45:18 53:20 58:11 81:16
Stephen 2:8 7:19
steps 58:19
sterilization 14:25 21:17
stop 91:2
straight 53:25 54:1 56:21 59:5 59:9
straightforward 60:23
strategic 40:21 41:4
strategy 60:15
Street 1:24 2:17 3:5 4:5
Strickley 60:9,10 60:14,24 61:3
stringent 82:8,19
strong 41:8

structure 55:10
stuck 90:18
study 15:14 21:19 36:1
subE 14:18,23 15:3,16 16:2,12 16:13 46:21
subject 6:4
submissions 16:3
subsets 25:10
substance 14:10
substantially 88:2
succeeded 61:23
success 11:4 15:20 20:2 21:7 21:8,11 40:18 40:18 53:8 70:7
sucrose 30:10,12 30:15,22
suddenly 27:10
sufficient 70:2
sufficiently 74:3
sugar 30:18
suggest 66:5 76:13
suggested 57:23
Suite 1:24 3:18 4:6
summary 82:21
support 79:15
supports 42:13
sure 5:18,19 6:20 7:15 9:18 20:3 31:10 33:16 44:9 48:14 73:15 79:2 91:5
surface 18:5 75:21 76:2 91:8
surfactant 76:10
surfactants 51:6 60:8 87:25 88:16
surprised 30:12
Sustol 88:15
switch 44:8
switched 27:11 35:13
switching 32:1
system 47:24 48:17 51:13 60:20 63:16
systemic 34:15
systems 48:4 49:19 79:20 80:24

T

T 2:6 3:1 4:1
table 51:5,5 61:5 87:22,24 88:7 88:14
take 8:13 9:19 10:20 18:7 50:14,15 51:22 52:10 53:20 65:21 68:15 75:14 79:21 85:15
taken 66:14,21 92:16
takes 28:14
talk 41:22 53:21 64:7,19,25 68:20 69:11 75:11 79:11,12 79:18
talking 11:15 12:20 19:13 20:8,16 24:1,2 24:14 26:23,24 50:6 58:7 60:20 61:17 62:5,6 74:13 75:8 78:23 79:16,20
talks 68:16
tandem 41:3
taught 16:22
Taylor 4:3 8:3,4 8:14
teaches 75:13
teaching 74:20 75:18
teachings 26:1 87:15
technically 22:22
techniques 58:19
tell 7:8 31:6 72:4 72:7,8 80:9 83:5
temperature 15:1 15:15
term 13:20 21:13 30:3 43:13 48:1
terminal 21:17
terminology 47:25 52:4
terms 22:23 23:16 39:6 86:24 90:4
test 14:7 28:19 38:20 39:1,2,23 40:3 42:25 43:1 46:19 65:20 82:8,12,13,19 82:22,24 85:21
tested 30:17 65:3 66:2,8 78:7 81:17
testified 16:16 35:1 42:7 61:16 67:9 78:5 86:16 87:16 91:9
testimony 19:7,8 22:2 23:7 40:2 79:6 80:13 82:17 89:2,14 89:16
testing 14:23 23:11 28:14 65:16
tests 14:25 29:11 42:9 43:4,16
thank 9:11,25 10:1,5 19:24 33:22 39:20 43:22 44:3,5,10 69:9 86:8 91:21 92:17,19,20,22
theoretical 90:10
Therapeutics 1:4 2:3 5:2 44:22
thermodynamic 80:4
thermodynami... 48:16,19 51:24
thing 8:17 14:6 15:23,24 34:24 47:23 51:9 72:12 73:23 79:23 85:4
things 25:3 37:24 48:21 58:24 59:11 63:9 65:1 78:2
think 5:7,9,20 6:2 6:6 47:22 50:24 57:6 68:17 71:11 82:4 84:1 86:1,6 91:22,24 92:5,13
thinking 62:17 92:7
third 10:24 18:10 19:4,6 26:21 90:7,13
thought 12:14 36:8 87:17
thousand 82:13
three 16:20,24 18:21 19:8,9 20:6 25:3 27:14 33:16 74:25
threshold 38:17
Thursday 1:13
tie 37:24
Tigan 3:3 6:12,13 6:17,20,24 7:1 7:3
tight 77:4
time 6:7 9:7,20 11:21,24 15:15 22:19,20 24:17 28:14 36:25 41:6,21 42:8 43:23 44:3 54:14 70:2 71:24 72:13 81:21 84:2,11 86:11 90:20,20
timeline 90:14
times 82:13
title 79:17
today 7:12 11:2 24:18 34:9 45:4 45:23 53:2 86:17
tonicity 30:24
top 50:1,4 64:12 64:17 66:23
totally 34:1
touch 73:13
transcript 5:8,11 89:13 92:15 93:10
treat 41:16
trial 10:6 11:15 11:20 16:10 25:11 28:13 30:14,20 33:13 33:25 34:12,13 36:7 38:2 40:2 43:17 45:3 64:3 89:1 92:15
tried 11:16 38:6 38:15 58:18 62:1 65:24 72:3 83:14 90:16
tries 53:1 60:21
true 21:6 43:7 93:10
truly 63:15
try 8:25 9:4 22:10 47:21 58:19,20 70:4 73:8 74:10 91:24
trying 53:24 59:10,13 72:16 85:14
TUNNELL 3:4
turn 68:14 76:16 77:25
turning 65:22
two 5:5 17:16,24 22:16,23 26:25

27:1,3 30:8,10 31:7 41:3 56:9 58:13,22 59:5,7 60:13 85:5 86:19
two-minute 41:1
type 51:13
types 51:8 87:24
typically 51:6 57:21

U

U 3:1 4:1
ubiquitous 50:17
ultimately 36:15 37:2 40:5,12 48:7 61:23
ultracentrifuga... 82:12
underneath 88:13
understand 13:9 24:16 70:20 72:15,19
understood 31:14 71:7
undisputed 12:11
unexpected 38:16 38:21,25 40:5,8 40:15 81:7
unfortunately 23:14
uninterrupted 9:3
UNITED 1:1
unpredictable 68:25
unrebutted 17:15 34:1
untested 47:10
unworkable 66:23
upper 21:6 22:10
USA 1:7 3:11 5:3
usage 87:11 88:19 89:14,14
use 12:16 32:7,21 32:22 43:19 46:5,7 48:1,24 50:17 51:1,2,6 69:19 74:8 76:14 77:23 81:2 82:22 84:16 85:21
useful 10:10 26:20 48:13 91:23
uses 51:25 66:19 82:12
USP 13:11,11,12 13:14,17 14:6,7 14:13 15:2,20 15:23 16:9,13 16:13 21:12,12 21:22 27:24 29:24 30:4 69:12,13,17 71:19 90:6,12
usual 87:7

V

v 1:6
vacation 92:1,21
valuable 10:8
value 40:8
values 22:11 32:25
variable 28:24 29:3
variables 15:15 28:19 51:14 89:22
various 25:8 69:1 91:7
verifying 89:21
Vernon 3:15 8:9
verse 50:10
version 35:22
versions 35:21
versus 25:13 41:6 69:5 90:5
view 31:23 41:10 70:19
visible 42:25
visual 83:8
vivo 85:22
vocabulary 25:15 25:23
volume 82:14
Von 23:17 78:17 78:22,25 79:9 86:13,15,25 87:9,13

W

Wacker 3:17
Wan 33:2,18 80:16,16
want 5:19 7:13 9:7 24:7 31:10 33:15 41:19,22 42:3 46:17 47:25 51:16 52:13 53:20 60:7,17 63:11 65:16 66:12 70:5 73:13 75:2 75:13 76:17 77:23 78:1 79:22 80:15 81:8 82:6 83:1 83:13 85:12,15
wanted 23:1 26:6 90:7
warning 35:2
Washington 1:24 2:18 17:19,20 18:2,4,7 41:10 47:19 52:25 75:11,13,17,19 76:5,9,13,14
wasn't 11:13 16:17 35:20 71:24
water 17:22,24 27:2,4 55:2
way 6:2 9:5 10:21 12:3 17:15 36:2 37:8 45:18 56:8 56:14 66:22 71:21 72:4 75:9 80:7 93:14
ways 12:5 22:21 57:13 62:1
we'll 6:7 9:19 46:24 47:15,21 49:1 51:9 53:18 74:6
we're 9:23 12:20 26:23,24 50:21 60:17,19 62:5,6 68:20 73:10 75:8 78:13,13 78:14 79:8,16 79:19 83:15,18 84:13 86:14 88:22 89:21 92:17
we've 45:23 65:13
week 9:17 43:3
weeks 92:2
weigh 41:8
went 18:4,4 50:10
weren't 72:18 85:8
West 4:5
whatsoever 69:19 79:15
wheelhouse 28:16
WHEREOF 93:17
white 40:16
WILLIAM 1:11
Wilmington 3:7 4:7 6:14 7:4
window 11:24 77:4
wish 5:9
WITNESS 93:17
wondering 67:13
word 16:6 22:20 22:20 25:11 73:24 88:1
words 67:19
work 37:19 38:3 38:5,8 55:5 56:12,13,21,22 59:22 60:19,22 61:20 64:6 65:5 67:4,10,11,16 67:21 70:9,11 73:7 83:20,23 90:14
worked 12:8 18:3 27:20 35:23 69:25 70:21
working 13:10 23:11 39:9 41:3 42:8 56:25 58:3 58:8 59:25 63:2 63:13,14 76:6
world 11:21 26:16 57:12
worried 56:3
wouldn't 47:14
wrapping 90:2 91:21
written 11:7 42:14,15 43:25 82:25 83:17

X

X 1:3,9

Y

Y-U-E 19:16,17
yeah 9:16 19:6 32:17 41:24 44:11,13 50:3 61:24 70:18 79:2 83:7 86:1
years 56:23 71:25
yolk 17:11 18:15 18:18 29:3 32:22 33:8 51:10 64:22 73:22 74:8
York 2:11,11
Yue 19:9,11,20 75:1

Z

zero 82:11
Zhou 15:4,5,12 15:13 21:19 31:25 32:1,1 38:10 39:23 41:9 46:15,20 47:15 50:13 52:18 53:12 58:16 59:8 64:4 64:13,18 65:1 72:23,24 73:1,5 73:5 76:7 78:8 81:15,16 84:20 84:24 85:16,16 85:18,18 90:3,8
Zoom 23:25 24:3

0

0 74:22
0.125 64:23
0.25 64:21
0.5 50:20 64:2 65:8 68:8 74:1 74:2 77:13,15

1

1 13:11 16:13 17:1,4 21:12 25:5,24 35:7 68:8 72:6 75:7 75:8 87:22,24
1.1 50:4
10 13:21 17:1 21:18 22:9,11 23:2 27:19 28:2 41:11,12 46:11 46:14 49:24 50:20 63:24 65:1,8 66:20 67:15 68:8,9,21 74:22 75:10 77:15
10:00 1:14
100 88:24 89:9
1000 4:5
100X 43:8
10166 2:11
10X 43:8
11 28:2 49:23 51:3 65:18 86:21 87:2
11:39 92:23
12 28:2
1201 3:5
127 54:11
13 28:2 64:14 68:3
14 28:3 30:2 69:16 89:3 90:2
15 28:3 64:21 71:25
1501 4:6
161 89:2
161:3 78:10
162:4 78:10
16th 3:6
17 54:11
1730 1:24
19801 4:7
19899 3:7
1990s 37:19 38:3
1993 90:20
1996 47:20 76:5

2

2 17:4 25:25 65:4 74:9
2.1 65:5
2.5 46:16,22 64:22 65:3 73:9
20 56:23 75:8
200 2:10
20036 1:24 2:18
2012 11:22 15:8 37:4 38:9
2014 11:23 22:19 37:6 53:22 63:22 84:16
202 1:25
202.551.1901 2:19
2024 1:13 93:18
2050 2:17
21 41:11,14
212.230.7892 2:12
22 55:8
22-985 5:2
22-cv-00985-W... 1:6
229 41:12,15
23 79:7
232-0646 1:25
233 3:17
24 54:11 78:10
26 61:3
29 1:13
29th 93:18

3

3 35:7 74:9 75:6,6 75:6 79:5 89:3
30 23:5,10 26:12 26:18 44:8 80:6
302.425.3096 3:8
302.504.1688 4:8
312.258.5523 3:20
318 65:18
341:1 79:7
341:24 80:13
342:11 80:13
395 54:7

4

4 39:8 42:18 53:10 65:4,22 66:14 67:7,8,15 70:3 83:4
40X 43:8
45 9:14,16,18,22 44:6
49 17:1 72:18
4X 43:8

5

5 23:10 39:12,21 40:4 53:10 65:11 70:3 76:20 77:14 81:14,14
50 89:8

6

6 54:7 66:3 73:25 74:1
6.5 40:4
60606 3:19
65 83:4
67 83:4

7

7 32:13 39:8,18
7.3 32:3
7.5 42:16,20
7100 3:18
729 13:12 16:13 21:12
794 13:21 41:13 42:23 44:1

8

8 42:18,20 55:8 66:3 74:9 83:3
8.7 39:19
8.74 42:19
8.8 39:11
8.9 39:19
8.92 42:19
80 34:14,24 35:5 36:10,20,23,24 37:13 54:18,22 63:4 88:4
812 1:24
845 10:13,14,21 11:1,3,8,9,22 12:2,16,23 13:2 13:7,10,25 14:4 14:11,12,21 15:9 16:22,24 17:7,8 18:2 20:18,24 21:16 22:9 23:21 27:23,25 28:7 29:23 30:15 31:20,24 36:18 36:21,22 37:1,3 37:14 38:9 39:7 41:9 42:9 46:15 46:18 47:12,15 50:13,19 52:18 52:25 53:12 58:16 59:8 63:19,22,25 64:5,15 65:6,10 65:19,25 66:4,7 66:16,17,18,23 67:2,16,20,24 68:2,19,19,23 72:3,18 73:17 73:23 74:1,4,7 74:12,12,14,16 74:20 76:7 78:4 78:6 84:17 88:3 88:13 89:4,5,14 90:21

9

9 13:21 41:11,12 54:7 65:18 86:19
9.0 42:16
9.95 65:25 66:19
901:17 55:4
902:5 55:4
903 55:8