IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

TAMMY KITZMILLER, et al	:	
	:	CASE NO.
v.	:	4:04-CR-002688
	:	
DOVER AREA SCHOOL DISTRICT, et al	:	

TRANSCRIPT OF PROCEEDINGS
BENCH TRIAL

MORNING SESSION

BEFORE: HON. JOHN E. JONES, III

DATE : November 4, 2005
9:00 a.m.

PLACE : Courtroom No. 2, 9th Floor
Federal Building
Harrisburg, Pennsylvania

BY : Wendy C. Yinger, RPR
U.S. Official Court Reporter

APPEARANCES:

ERIC J. ROTHSCHILD, ESQUIRE
WITOLD J. WALCZAK, ESQUIRE
STEPHEN G. HARVEY, ESQUIRE
RICHARD B. KATSKEE, ESQUIRE
THOMAS SCHMIDT, ESQUIRE
For the Plaintiffs

PATRICK T. GILLEN, ESQUIRE
RICHARD THOMPSON, ESQUIRE
ROBERT J. MUISE, ESQUIRE
For the Defendants

I N D E X T O W I T N E S S E S

THE COURT: All right. Good morning to all in what, I believe, will prove to be the final day of this case. And we remain in the cross examination of the expert witness, and I'll turn it back over to you, Mr. Harvey. You may proceed.

CROSS EXAMINATION (CONTINUED)

BY MR. HARVEY:

Q. Good morning, Dr. Minnich.

A. Good morning.

Q. I'm willing to pretend that we're doing this in front of an empty courtroom, if you are. That will make it a little bit easier for me; perhaps for you, too.

A. Okay.

Q. When we left off yesterday, we were talking about the argument of irreducible complexity and where it finds its origins. And I'd like you to turn to what's been marked as P-845. And, Matt, if you could bring that up on the screen. Please let me know when you have that in front of you.

A. Okay. I've got it.

Q. Or you can look on the monitor, if that's easier for you. This is a publication from the Institute for Creation Research in 2005, and it's authored by a man named Dr. Henry Morris. Have you ever heard of Dr. Henry Morris?

A. I have.

Q. He's actually the founder and president of the Institute for Creation Research, isn't he?

A. That's my understanding, yes.

Q. And he's really the founder of the creation-science movement, is that your understanding?

A. I haven't followed that movement that closely, but I'll take your word for it.

Q. And what he's got here is, he's reviewed a book called The Design Revolution by William Dembski. And I'd like to just ask you some questions about some of the things that are said in here, but first, have you read this review before today?

A. I haven't. I haven't seen it.

Q. Well, if you turn to the first page -- and, Matt, if you could bring it up -- there's a statement on the right-hand side where he says, We do appreciate the abilities and motives of Bill Dembski, Phil Johnson, and the other key writers in the intelligent design movement. They think that if they can just get a wedge into the naturalistic mind set of the Darwinists, then later, the Biblical God can be suggested as the designer implicit in the concept. Do you see that?

A. I do.

Q. And I would like to know if you agree with me

that, that's what the design proponents are trying to do?

A. No, I don't think so at all. I mean, that's a pretty subjective statement.

Q. Well, if you just turn to the second page of that, there's a statement there -- and I'm going to ask Matt to highlight this, too. It begins with the word second. It is not really a new approach. Matt, can you bring that up? Referring to the intelligent design approach, it says, quotes, Second, it is not really a new approach, using basically the same evidence and arguments used for years by scientific creationists but made to appear more sophisticated with complex nomenclature and argumentation, end quotes. Do you see that?

A. Yeah, I see it.

Q. Do you agree that's a true statement?

A. Well, I would -- in terms of the context, I'd rather read the whole article. I don't agree that's necessarily true at all. Part of it is true. I think some of the arguments that the creationists proffered back in the '80's are legitimate and they can be used, just looking from the scientific approach.

Q. Well, I'd like to ask you about another statement in this article by Henry Morris, and it's in the

right-hand side, and I'll ask Matt to flag that as well. Highlight it, please. And I want to know whether this -- you know this to be true.

Quotes, These well-meaning folks did not really invent the idea of intelligent design, of course. Dembski often refers, for example, to the bacterial flagellum as a strong evidence for design, and indeed it is, but one of our ICR scientists, the late Dr. Dick Bliss, was using this example in his talks on creation a generation ago, close quotes.

Did you know that a man named Dr. Dick Bliss, who's affiliated with the Institute for Creation Research, was using --

MR. MUISE: Objection, Your Honor. He's asserting this as a statement of truth. And this is a hearsay statement. If he wants to ask him if he agrees with that statement, that's something totally different, but he's asserting this to be a truthful statement.

THE COURT: Let's let him finish the question, and I'll take the objection. Finish you shall your question, please.

BY MR. HARVEY:

Q. Dr. Minnich, I'd like to know whether you know that a man named Dr. Dick Bliss, who was affiliated with the Institute for Creation Research, was using the

bacterial flagellum as part of his argument for creationism years before the intelligent design movement picked up on it?

THE COURT: All right. The objection is overruled for the record. You can answer the question.

THE WITNESS: No, I wasn't aware of it, but I'm not surprised. Again, like I asserted yesterday that, the bacterial flagellum is one of the organelles that we know the most about of any. And so it's natural to look at this structure as a model for either evolution or irreducible complexity. So I'm not surprised. I didn't know it, but I'm not surprised.

BY MR. HARVEY:

Q. Now you and Dr. Behe claim that the bacterial flagellum is irreducibly complex and thus could not evolve. Is that a fair statement of your position?

A. Correct. There is some -- right. It's irreducibly complex in terms of the genetic analysis of the structure.

Q. Please tell me whether you agree with this statement. Neither you nor Dr. Behe has set out to do any original research to show that the bacterial flagellum could not have evolved, as you contend?

A. I think the work that I've published on for the last 12 years bears on this question of irreducible

complexity, but I'm not aware of specific experiments addressing, you know, I mean, real lab experiments addressing the evolution of this structure.

There have been plenty of publications comparing the flagellum with the type III secretory system and whether it's an intermediate. So, in that sense, I think some of my work bears on that as well.

Q. So in other words, you agree with the statement I said?

A. Repeat the statement.

Q. Neither you nor Dr. Behe has set out to do any research to show that the bacterial flagellum could not have evolved?

A. I want to qualify that. You know, the thing that's interesting to me was, back in 1994, my laboratory, my students and I were the first to propose that the bacterial flagellum could be used for other than secretion of flagella proteins. We were the first to actually predict that the type III secretory system, which we didn't know existed at that time period, would either be the basal body of the flagellum or a structure that looked very much like it. Okay.

So I think that I have had some impact in this area directly. And the ironic thing is that, presenting this at scientific meetings and in grant proposals, it

was considered a whimsical idea because there was no apriority evidence that the secretion of virulence factors or the flagellum had anything to do with each other.

Q. Well, would it be fair to say that, neither you nor Dr. Behe has published any papers in scientific journals on whether -- on the evolution or not of either the type III secretory system or the bacterial flagellum?

A. I'm not funded to look at the evolution of the flagellum. I'm funded to look at its effect in terms of regulation and virulence and type III secretion.

Q. In other words, the statement I just said was true?

A. That's not the emphasis of my work.

Q. Now you did publish a paper, you told us about in your direct testimony, with Steven Meyer, correct?

A. Correct.

Q. That was published in some conference proceedings with respect to a conference that took place in Greece?

A. That's correct.

Q. And Steven Meyer is not a biologist, correct?

A. He's not. He's a philosopher of science.

Q. So he's not a scientist?

A. Well, he's a philosopher of science. He's

trained as a physicist, my understanding, and work in that area for a while.

Q. Now this was a conference for engineers who used natural mechanisms to devise new technologies, do I understand that correctly?

A. Correct.

Q. It wasn't a conference for biologists or it wasn't a conference on evolutionary biology, was it?

A. It was a conference that included biologists and engineers and architects, as I discussed yesterday, looking at design in nature.

Q. And the paper that you published was only minimally peer reviewed, isn't that true?

A. For any conference proceeding, yeah. You don't go through the same rigor. I mentioned that yesterday. But it was reviewed by people in the Wessex Institute, and I don't know who they were.

Q. I'd like you to take a look at what's been marked as P-837. Matt, if you could bring that up.

A. May I just look off the screen?

Q. Yes. And in that paper, you cite several peer reviewed papers, including a paper in the Journal of Molecular Biology that suggests that the bacterial flagellum was the evolutionary pre-cursor to the type III secretory system, isn't that correct?

A. Correct.

Q. And this actually is the paper you cite?

A. Correct.

Q. And from this paper, and this is in your report at -- you stated this in your report at page 9. We'll bring that up. It's P-614. Matt, could you highlight the sentence that says, neither standard neo-Darwinism, in the bottom paragraph. It begins with -- it's the third sentence. It begins, Given that neither. And from this paper, P-837, you draw the conclusion, as stated in your report, and this, I believe, is a quotation from the article, the conference proceeding paper, that, quotes, Neither standard neo-Darwinism nor co-option, has adequately accounted for the origin of these machines, or the appearance of design that they manifest. One might now consider the design hypothesis as the best explanation for the origin of irreducibly complex systems in living organisms. Isn't that true?

A. Yes, that's correct.

Q. Now the paper that we just looked at, the one that you were relying on, that's a paper in a peer review journal, isn't that right?

A. That's correct.

Q. And actually, you're aware that there are a number of papers in peer review journals on this same

subject?

A. I am.

Q. For example, please take a look at what's been marked as P-284.

A. Got it.

Q. And if you look in the abstract, there's a sentence that I just want to bring you to, that I think it summarizes what we need to discuss. It's the fourth sentence in the abstract, Matt. The one that begins, Our analysis.

This says that, Our analysis indicates that the type III secretory system and the flagellar export mechanism share a common ancestor, but they have evolved independently from one another. Do you see that?

A. I see it.

Q. Unlike your paper, that is a peer reviewed scientific paper, correct?

A. In that -- in that sense, yeah. Again, mine is a conference paper, so --

Q. This is a true peer reviewed paper, correct?

A. Correct.

Q. Now I'd like you to look at another, if you turn to Exhibit P-740. This is another paper in a peer reviewed scientific journal called Trends in Microbiology, is that correct?

A. Correct.

Q. I think I'd like to go to the second page of this, the paragraph on the right-hand side that begins on the right-hand side, Matt, about halfway down that paragraph, the sentence beginning with the words, regarding the bacterial flagellum, and the rest of that paragraph.

Now this says that, quotes, Regarding the bacterial flagellum and the TTSS's, we must consider three, and only three, possibilities. First, the TTSS came first. Second, the flagellar system came first. Or third, both systems evolved from a common pre-cursor. At present, too little information is available to distinguish between these possibilities with certainty. Do you see that?

A. I see it.

Q. Now I could show you, and I have in my notebook, a number of other peer reviewed scientific journals that discuss this subject. But would you agree with me that the -- that how the bacterial flagellum and the type III secretory system evolved is an unsettled scientific question?

A. Well, that's part of why we're here. It's a good scientific debate. And that's how science works. I think if you read -- if you read the conclusion of this

paper, Bill Sayer is favoring the fact that the flagellum came first.

And I think that the arguments and the evidence, not only the ones that we proffered in our conference paper, but the new evidence that's comes out, favors that, that scenario. I mean, this is -- the type III secretory system is limited, to our knowledge now, to a narrow group of gram negative organisms, that the type III secretory system, from what we know now, only is designed to effect eukaryotic organisms either in a symbiotic relationship or a parasitic relationship.

So eukaryotic organisms evolved after prokaryotic organisms. The structure is directly to eukaryotic organisms. And you have to postulate that all the other bacteria, as they evolved, lost this TTS system, and that was only retained by this select group, you know.

So I think the evidence is getting to the point that we're going to side with the fact that the flagellum came first, more complex structure came first before the TTSS.

Q. There's actually a number of scientific papers that go the other way, isn't that correct?

A. Well, I think so. I think it's part of the nature of this debate. I mean, there's some subjectivity to it. If you look at Bill Sayers' first

paper, just based on the sequence analysis, there's much tighter similarity between the type III secretory system proteins than there are in flagellum, which is an indication in evolutionary terms that these came later. They haven't evolved as much as the flagellar system.

Q. The point is not that the chicken or the egg came first, Dr. Minnich, it's that a lot of highly qualified scientists are looking at this question and trying to determine the evolution of the type III secretory system --

A. You bet.

Q. -- and the bacterial flagellum. That's a true statement, isn't it?

A. That's a true statement.

Q. There's a number of papers that have been published in peer reviewed scientific journals on both sides of this question, and the papers are inconclusive, correct?

A. They're inconclusive, but I think if you look at the more recent ones, you know, the gavel is falling on the side of the flagellum first.

Q. Well, the real point of this is that, none of those highly qualified scientists who are doing research and publishing in peer reviewed scientific data are suggesting in any way that these systems did not evolve,

but were instead created abruptly by an intelligent design agent?

A. I never said that the flagellum was created abruptly. I have no idea in terms of how it came about. I just look at the structure. And it has the signature of irreducible complexity and design. It's a true rotary engine. I just come back to that. It doesn't say anything about where it came from, when it was made, or who was involved in it, or what was involved in it.

Q. Let me reask the question again, leaving out the word abruptly. None of the many highly qualified scientists who are doing research in this area right now and publishing in peer reviewed scientific journals are in any way suggesting that these systems, the type III secretory system and the bacterial flagellum, did not evolve, but instead were created by an intelligent designer, right?

A. No, we're looking at the function of these systems and how they could have been derived one from the other. And it's a legitimate scientific inquiry. And it's good. I mean, I have no problem with that.

Q. In your direct testimony, you showed us pictures and made reference to macromolecular machines, right?

A. I did.

Q. You call them nanomachines, as we discussed

yesterday?

A. These refer to either way in the literature.

Q. You are not suggesting, are you, Dr. Minnich, that these are actually machines, are you? You're saying that they're like machines, aren't you?

A. If you read Bruce Alberts' review article, he specifically states -- and we can look it up, if you want. Why do we call them machines? Because they are machines.

Q. You think that Dr. Alberts says, these are machines?

A. Well, let's look at the paper.

Q. Well, actually, I just want to know what your understanding is. I was under the impression that machines were created by human beings, that a machine was, by definition, something created by a human being. Do you agree with that?

A. Yeah, I mean, that's our -- that's our reference.

Q. And you're not aware of any machines that were created by any being other than a human being, are you?

A. Well, isn't that what we're talking about? Isn't that the surprise that, when we open up the cell and we find these macromolecular machines, that all of my colleagues refer to them as, or nanomachines, that these were unanticipated. So we've got to -- and they

function as machines, invented like humans, as David DeRosier says, or these other people.

Q. Well, my question to you is, are you aware of any machines that were invented, created, or designed by anyone other than a human being?

A. I think it would boil down to a definition of a machine, you know. Some animals can put together some, you know, crude devices to, you know.

Q. With the exception of possibly animals and human beings, are you aware of any other beings that have ever created, invented, or designed a machine?

A. No.

Q. Now you relied in your testimony and the argument that you presented in your direct evidence, in your direct testimony, excuse me, on quotations from a number of eminent scientists, isn't that true?

A. I did. And I think I qualified as well that these are all individuals that are evolutionists. So I'm not trying to, you know, put words in their mouths or say they agree with me. I'm just looking at what their statements say.

Q. The three scientists you mentioned were Dr. Woese, Dr. Alberts, and Dr. Simon Conway Morris?

A. Correct.

Q. Those are three of the most eminent scientists in

the world, would you agree?

A. I agree.

Q. And let's talk about Dr. Woese for just a second. In your testimony, you rely on an article by Woese and two quotes in particular. Matt, please put up slide number 10. This was a quotation from Dr. Woese that you cited in your direct testimony, correct?

A. In my direct or my deposition, I think I had included past this last phrase here.

Q. And you also rely on another quotation from Dr. Woese, which is slide 28, Matt, please. Do you remember talking about this in your direct testimony?

A. Yes.

Q. Now, Matt, please put up D 251 at page 176. In the upper left-hand corner, Matt, the first two-thirds of the paragraph. Dr. Minnich, would you agree with me that Dr. Woese, this eminent scientist, completely rejects the machine analogy. Would you agree with that?

A. I think, in this article, he is really objecting to the point from molecular biology, looking totally at the cell as a reductionist point of view, because from a reductionist point of view, you do end up looking at organisms as machines. In that sense, I think he's referring to it, that in his view, the organism is more than the sum of its parts, and this has in part been

ignored by molecular biology, and he wants to bring things back to the higher level in terms of organismal biology and evolutionary studies in terms of the origin of these.

Q. Please tell me. I'm going to read a passage to you, and tell me if I've correctly quoted Dr. Woese in a peer reviewed scientific journal.

Quotes, Let's stop looking at the organism purely as a molecular machine. The machine metaphor certainly provides insights, but these come at the price of overlooking much of what biology is. Machines are not made of parts that continually turn over, renew. The organism is. Machines are stable and accurate because they are designed and built to be so. The stability of an organism lies in resilience, the homeostatic capacity to reestablish itself. Did I read that correctly?

A. Right.

Q. Dr. Woese rejects the machine analogy, correct?

A. He rejects the machine analogy because, you know, this is based on our -- and I brought up this point yesterday in terms of the bacterial flagellum. When it's referred to as a machine that looks like it was invented by a human more than any other machine is an under statement because of these very parameters as well. It is resilient. It can self-assemble. We can't

make anything like it. So our analogy, I think, is limited more than anything else.

Q. Matt, pull up slide 16, please. This is a slide that you used in your direct testimony?

A. Right.

Q. And this is referring to an article in the journal Cell by Dr. Alberts?

A. Correct.

Q. And Matt, please pull up slide 17. And you rely actually on the table of contents from that journal in support of your argument that these are like a machine, right?

A. I have that quote in there, right, directly from the table of contents.

Q. Right. And if you look at the article itself, as opposed to the table of contents, although I think it's clear from the table of contents, he's quite clear in saying that, these protein assemblies that he's discussing in his article are like machines invented by humans, correct?

A. Correct.

Q. And are you aware that, moving from the machine analogy just to the overall substance of intelligent design, that Dr. Alberts completely rejects the conclusions that you purport to draw from his work?

A. Oh, I'm aware that he is a strong advocate of evolution. He's even co-authored a manual for teaching evolution at the secondary level in high school.

Q. Matt, please pull up P-852. You can either look on the screen or you can look in your book, whatever is more convenient for you.

A. What was the number again?

Q. 852.

A. Right.

Q. This is a letter to the editor that Dr. Alberts, who, by the way, was the president of the National Academy of Sciences for 12 years, right?

A. I am aware of that.

Q. This is a letter to the editor that Dr. Alberts published in the New York Times. And I'm going to read it to you. An please tell me if I've quoted it correctly. In Design for Living, on February 7, Michael J. Behe quoted me recalling how I discovered that the chemistry that makes life possible is much more elaborate and sophisticated than anything we students had ever considered some 40 years ago.

Dr. Behe then paraphrases my 1998 remarks that the entire cell can be viewed as a factory with an elaborate network of interlocking assembly lines, each of which is composed of a set of large protein machines.

That I was unaware of the complexity of living things as a student should not be surprising.

In fact, the majestic chemistry of life should be astounding to everyone. But these facts should not be misrepresented as support for the idea that life's molecular complexity is a result of intelligent design. To the contrary, modern scientific views of the molecular organization of life are entirely consistent with spontaneous variation and natural selection driving a powerful evolutionary process.

In evolution, as in all areas of science, our knowledge is incomplete. But the entire success of the scientific enterprise has depended on an insistence that these gaps be filled by natural explanations, logically derived from confirmable evidence. Because intelligent design theories are based on supernatural explanations, they can have nothing to do with science.

Were you aware that, that's Dr. Alberts' position on the subjects that you've discussed in your direct testimony?

A. I am aware. I haven't read this letter until now, but I'm not surprised. I would disagree with the bottom though. Because intelligent design theories are based on supernatural explanations, they can have nothing to do with science. You know, we're not -- I'm

the first person to say, we look for a natural explanation, but this is -- the entire success -- the scientific enterprise has depended on an insistence that these gaps be filled by natural explanations.

We don't have a natural explanation yet for these macromolecular machines. That's the whole point. And again, going back, I think Dr. Alberts perhaps was caught in his own language. All right. And I find this amazing that, you know, we use this language, this description of machines, and elegant chemistry, and then go back and say, but this is entirely derived from natural process of evolution and change over time.

Q. Matt, will you please pull up Exhibit P-848. And Dr. Minnich, you can take a look at that either on the screen or in your book.

A. Okay.

Q. This P-848 is an article that Dr. Alberts published with a man named Jay Labov in a journal called Cell Biology in the summer of 2004, isn't it?

A. Right.

Q. And in this article, Dr. Alberts summarizes the efforts of the National Academies of Science to address challenges to the teaching of evolution in the nation's public schools. Isn't that true?

A. I haven't read this article.

Q. So you weren't aware of that?
A. Oh, I'm aware of it, right, that he's -- his position.
Q. Dr. Alberts has made it very clear in the scientific community that he does not believe that intelligent design qualifies as science, correct?
A. Again, I haven't read the specifics of this. I don't know what he's basing his conclusion on.
Q. Well, I'm asking you if you knew that Dr. Alberts has made it very --
A. I'm aware that the National Academy of Science has come out against the teaching of evolution, as well as the AAAS and a number of other societies. In fact, I was even informed Saturday before I came out here that the American Society for Soil Science had come out making a statement against intelligent design, which I find incredible.
Q. We discussed Dr. Woese just a couple minutes ago. And you, in your reports, cite and quote from a 2004 article by Dr. Woese to suggest that the modern day supports of evolutionary theory are ripe with problems. That's true, right? You said that in your expert report?
A. Correct. And I also quoted, I think, more of a light on Morris's papers as well illuminating that the

problems that we have in evolution.

Q. We'll talk about Dr. Simon Conway Morris in just a minute. But you're aware that Dr. Woese completely rejects the idea that intelligent design is science, right? You're aware of that?

A. I haven't talked to Dr. Woese, so I'm not sure of his personal opinion. I know he's an evolutionist, so it doesn't surprise me. But you're asking if I know specifically, and I don't.

Q. I haven't spoken to him either, although I'm sure it would be a fascinating conversation.

A. I would like to.

Q. If you could turn to what's been marked as P-847. And this is an article from an online publication called Wired Magazine?

A. Right.

Q. Have you ever heard of this publication?

A. I have.

Q. And if you go to page 6 of this, there's a quote from Dr. Woese in there, and I just want to know if you were aware that he had said this?

MR. MUISE: Objection, Your Honor. Again, it's an assertion that he is asking whether he's aware that he said that. He's asserting he actually did say this. We don't have any foundation for this. It's

obviously trying to be offered for the truth that he actually asserted this statement. He said he doesn't have any personal knowledge of this statement.

MR. HARVEY: I am trying to determine whether he knows that Dr. Woese actually made a statement in here that completely rejects and rebuts the position that this witness offered in direct testimony. He can either say he's aware of it or aware of the position or he's not.

THE COURT: Why doesn't it go to the truth?

MR. HARVEY: Actually, I am not offering this for the truth. I am asking this witness if he's aware of that. And that tends to impeach his direct testimony.

THE COURT: Well, I think the proper way to do it is to ask him if he's aware of a statement without reference to the exhibit. I think that will cure the objection for the moment.

MR. MUISE: Well, the way he asserted it, are you aware that he made this statement. He is asserting that Dr. Woese actually made that statement.

THE COURT: I think the proper phraseology for the question is a statement that, and I'll allow that, without reference to the article. And I'll sustain the objection to that extent.

BY MR. HARVEY:

Q. Well, Dr. Minnich, are you aware that Dr. Woese has stated that, To say that my criticism of Darwinists says that evolutionists have no clothes is like saying that Einstein is criticizing Newton, therefore Newtonian physics is wrong. Intelligent design --

MR. MUISE: Again, Your Honor.

THE COURT: Hold on. Hold it. That's not consistent with the ruling on the objection. I don't want you to read the statement into the record. I'll allow you to paraphrase this statement without reference to the article. That's the only way we're going to be able to do this. If his answer is in the negative, then we move on.

MR. HARVEY: I misunderstood your ruling.

BY MR. HARVEY:

Q. Dr. Minnich, you're not surprised -- you wouldn't be surprised at all to learn that Dr. Woese has stated publicly that intelligent design is not science, would you?

A. Again, I haven't talked to Dr. Woese specifically on this area, so I'm not aware of the statements.

Q. So you're not aware at all that Dr. Woese has come out publicly and said that intelligent design is not science?

A. I haven't.

MR. MUISE: Objection, Your Honor. He's making an assertion. Does he know? Do you know if? I mean, I'll --

THE COURT: I'll allow that question without reference to the article. No, the objection is overruled. And the answer stands.

BY MR. HARVEY:

Q. You mentioned Simon Conway Morris. Simon Conway Morris is a leading paleontologist, correct?

A. He is.

Q. He is perhaps the foremost expert on the Cambrian explosion?

A. Right, based on his work on the Burgess Shale.

Q. And he's a renowned evolutionary biologist?

A. He's written extensively on the subject, yes.

Q. Are you aware that Dr. Simon Conway Morris has taken the position that intelligent design is not science?

A. I am not aware of that. But again I would like to, you know, for the record, state, in his paper, the problem of convergence in evolution, the channeling, in his mind, brings up the question of teleology, directly quoted from his paper, and he cites two authors that have been involved in intelligent design. So I think

he's looking at the possibility, you know, as a scientist and looking at the claims.

Q. You're aware that in the paper you're referring to, Dr. Conway Morris said that, if, with the underline on it, if evolution is in some sense channeled, then this reopens the controversial prospect of teleology?

A. Correct.

Q. Now I'd like to ask you about some other questions. In your direct testimony, you said that you infer the existence of intelligence by standard scientific reasoning. Did I hear you correctly?

A. Correct.

Q. And is the explanation of intelligent design that you provided to this Court similar to the presentation that you would make if we were a group of scientists and you were trying to persuade us that ID, intelligent design, is scientifically valid?

A. Yes.

Q. And you testified that it's a legitimate scientific practice to draw conclusions from published studies or data that are different than those drawn by the scientists who actually compiled the data, correct?

A. It happens all the time.

Q. And you cited Drs. Crick and Watson as an example, correct?

A. Right.

Q. They relied on data published by another scientist, and they drew their own conclusions about that data?

A. There's always the cross fertilization of data and ideas, and somebody will synthesize a new model, and it can be tested.

Q. Drs. Crick and Watson won a Nobel Prize for the conclusions they drew from that other scientist data, correct?

A. Correct.

Q. Now the way they did that is, they published their thinking in peer reviewed scientific journals for the scrutiny of their colleagues, true?

A. In a one-page article in 1953 in Nature, right, the first publication on the structure of DNA.

Q. Nature, that's a peer reviewed scientific journal?

A. It is.

Q. Is that the probably the number one most respected peer reviewed scientific journal in the world?

A. I think Nature, Science, PNAS, Cell, would all fit in that.

Q. Now Dr. Crick and Watson didn't win a Nobel Prize by trying to convince school boards, average citizens,

lawyers, the press?

A. I made that clear yesterday, that I wasn't equating what we were doing with the work of Watson and Crick. I'm not so presumptuous or arrogant to make such a comparison.

Q. Well, it's important to publish your scientific conclusions in peer reviewed journals so that other scientists, people who are qualified to evaluate those conclusions and the evidence from which those conclusions are drawn, so that those people, your colleagues, so that they can look at your conclusions and determine whether they make sense or not?

A. I agree.

Q. Hence the expression, publish or perish, right?

A. Right. And publish and perish as well.

Q. That's your second very good joke in this -- leading all expert witnesses.

A. I'm concerned, you know. There's a risk involved. That paper that I published for the conference proceedings ran a lot of risk in terms of the implications and how people would review my work based on the conclusions that I was making. And that's part of the problem, is that, to endorse intelligent design comes with risks, because it is a position against the consensus. And science is not a democratic process.

But peer review works both ways. And it is, like I said, it's dangerous. I'm taking a risk in putting these ideas out, as well as everybody else in this area that's trying to get published.

Q. And that's because the, really the entire scientific community rejects the idea that intelligent design is science, isn't that correct?

A. That is correct, at this point. And that is the history of science as well.

Q. And this explains why you have not published any articles on intelligent design in any peer reviewed scientific journals, correct?

A. By your definition, no. But I have one in a conference proceedings, so I'm willing to put my ideas out there. And, but again, my focus in my laboratory is on pathogenesis. That's my primary concern. And that's what I publish on. And that's -- you know, I have to keep my lab funded.

The implications, I think, contribute to our idea of intelligent design. And I certainly don't hide my feelings or arguments as well. I mean, I've talked about this. I've been open about it with my colleagues. I think the more we discuss it, the merits of some of these things are understood, and they're not dismissed outright before being weighed, which is the tendency.

Q. Dr. Minnich, you're not aware of any research articles advocating intelligent design in any peer reviewed scientific journals, are you?

A. I think yesterday there was, as I mentioned, there were around, between, I don't know, seven and ten. I don't have the specific ones. But Dr. Axe published one or two papers in the journal Biological Chemistry that were specifically addressing concepts within intelligent design. Mike Behe had one. Steve Meyer has had one.

So, you know, I think the argument that you're not publishing in peer reviewed literature was valid. Now there are a couple out there. How many do we have to publish before it is in the literature and being evaluated? I mean, do we have to have 25? 50? I mean, give me a number.

Q. Let's just talk about Dr. Axe. Those papers don't advocate intelligent design, do they?

A. That's the intent in terms of looking at protein sequence and domains and sequence space.

Q. He doesn't mention the words intelligent design anywhere in those articles, isn't that correct?

A. There's a reason for that.

Q. And you mentioned something by Dr. Behe, is that right?

A. Correct.
Q. That's the article with Snoke?
A. Yes.
Q. That wasn't in a scientific journal, was it?
A. Well, refresh my memory. I haven't read the papers.
Q. So you don't know -- if Dr. Behe testified that that wasn't in a scientific journal, you wouldn't question it?
A. I wouldn't dispute it, no.
Q. Intelligent design posits the existence of an intelligent agent who devised a plan, a pattern, a blueprint for living things, isn't that correct?
A. I don't agree with that definition. I think intelligent design is looking at nature and asking, are the complex structures that we find possibly developed by natural cause alone or not? Is a design real or apparent?
Q. You testified about the book Of Pandas and People in your direct?
A. Right.
MR. HARVEY: Your Honor, may I approach?
THE COURT: You may.
BY MR. HARVEY:
Q. I've handed you a copy of Of Pandas and People,

opened to page 14. In the lower right-hand side, there's a statement there?

A. Okay.

Q. It's actually the last sentence on that page. Intelligent design, by contrast, locates the origin of new organisms in an immaterial cause, in a blueprint, a plan, a pattern devised by an intelligent agent. Isn't that what the book says?

A. Right. I mean, in that sense, yes, there's an intelligent cause behind the specified complexity that we find in nature.

Q. And intelligent design also, another way of saying the same concept is that, intelligent design posits the concept of a master intellect, isn't that right?

A. To a degree, yes, but it doesn't indicate or identify master intellect, who it is.

Q. Now you think that the intelligent agent is the God of Christianity, isn't that true?

A. Are you asking me personally?

Q. Yes.

A. Okay. Yes, my personal opinion, but that's not based on a scientific conclusion.

Q. You're affiliated with the Discovery Institute, right?

A. I'm a fellow.
Q. And you're proud of your association with the Discovery Institute?
A. Yeah, it's a good network for --
Q. And you're familiar with Philip Johnson?
A. I am familiar with Philip Johnson.
Q. He also thinks that the intelligent designer is the God of Christianity, isn't that true?
A. That's my understanding, yes.
Q. And Michael Behe is a fellow of the Discovery Institute?
A. He is.
Q. And he also thinks that the intelligent designer is the God of Christianity, correct?
A. I haven't asked Mike directly, but he's a Catholic, I know, so I assume so.
Q. William Dembski, you know that he thinks the intelligent designer is the God of Christianity, right?
A. Correct. But again, these are personal opinions that aren't based on looking at the science.
Q. I understand. Dean Kenyon is a fellow with the Discovery Institute?
A. I'm not sure, but I'll take your word for it.
Q. Do you know Charles Thaxton?
A. I know Charles Thaxton.

Q. He's a fellow with the Discovery Institute, right?

A. I believe so.

Q. Do you know he thinks the intelligent agent is the God of Christian?

A. I'm aware of that.

Q. Nancy Pearcy. She's a fellow with the Discovery Institute?

A. Correct.

Q. And she thinks that the intelligent agent is the God of Christianity, isn't that right?

A. Correct.

Q. Now I want to ask you about -- we talked just about the term intelligent design. As I understand it, intelligent design, as an argument, is saying that this intelligent designer not only designed living things, but also built living things. Do you agree?

A. Repeat the question.

Q. Sure. Intelligent design, as a concept or an argument, is saying that the intelligent designer not only designed living things, but the intelligent designer built living things?

A. I haven't heard that inference before. I mean, there are parts of that I would agree with, but in terms of aboriginal forms or whatever, there is nothing in

terms of the mechanism implicit in intelligent design that I'm aware of.

Q. Well, the statement that I said, that's -- that flows logically from the concept?

A. Right.

Q. You're not saying that the intelligent designer drew up this blueprint and then set it aside, are you?

A. No, no, no.

Q. The intelligent designer designed and built these things?

A. Correct.

Q. Designed and created these things, correct?

A. Well, your use of the word created, invented, whatever. I mean, it was a creative process at some point, whoever the designer was.

Q. But you would agree with me, whether we want to say built or created, made, constructed, put together, it's all the same thing? The intelligent designer designed and created these living things. That's the logical implication of intelligent design?

A. Again, I go back to what Ii said yesterday. As biologists, all of us look at nature and we see design. It's overwhelming by our own admission. The question is, is it real design or only apparent design? Or is it a combination of both? You know, and I think those are

legitimate scientific questions to be asked.

Q. I'm anxious to explore that with you, but first I have to get this cleared up. You agree that it's intelligent design and construction, building, creation, it's both concepts, correct?

A. Correct, given some of the structures we find in the simplest cells that supersede anything that our engineers can build at present, yeah, I would say it's a source of intelligence.

Q. Wouldn't it be more correct to call the argument or the theory, intelligent design and creation?

A. No. You know, I think I resent the consistent misrepresentation of intelligent design with creationism.

Q. Well, intelligent design and construction, would that be better?

A. Okay.

Q. You can accept --

A. At some point. All we can say is that, there's design -- I think it's real. There's a designer. I don't know who it is or what it is, you know, from the science that I'm deriving that assertion from. Science isn't going to tell me.

Q. Have you ever worked with an architect, for example, on your house or --

A. You bet.

Q. They refer to themselves -- sometimes you can go to an architect that design, and then you can go to a contractor, or you can go to one that does it all together, and that's called design build. Are you familiar with that?

A. Correct.

Q. And that's really what you're saying here, is that the intelligent designer designed and built, correct?

A. Right.

Q. Now you have stated that intelligent design has a positive case and a negative case?

A. Correct.

Q. And the positive case is based on the appearance of design in nature. Is that true?

A. Correct.

Q. And according to you, we infer design when we see a purposeful arrangement of parts?

A. Correct.

Q. Like a hand or an eye?

A. We're really restricted to the molecular level at this point. We don't know, you know, all of the variables involved in the eye or the hand. We look at molecular machines. Those are well-defined. All the

parts are known. I'll leave it at that. At the molecular level.

Q. The focus of your thinking has been on molecular machines, I recognize that. But more broadly speaking, the intelligent design position asserts, as an illustrative proposition, that, for example, the hand is a purposeful arrangement of parts and, therefore, we can infer that the hand was designed?

A. I haven't made that assertion.

Q. Are you familiar with the Reverend William Paley?

A. I am.

Q. And Reverend William Paley posited the argument for the existence of God based on design in nature, correct?

A. Correct.

Q. And that's often times referred to, and if you look it up in the dictionary, you'll find it referred to as the teleological argument, right?

A. Correct, purpose.

Q. And you would agree, that's not a scientific argument?

A. Again, I think it is. It's addressing the question, is the design real or apparent? There are two answers to the question, both of them very interesting, and both of them are packed metaphysically. So, right.

I think we can look now and start dissecting what are the properties of real design.

Q. So you understood -- you understand today, Dr. Paley's argument, as it's expressed in academic circles, as a scientific argument?

A. It's a philosophical argument looking at nature in that sense. It was the argument, I think, that was really important for Darwin to address. I don't think we can really understand Darwin's contribution until we understand the argument of design, that he was really supplanting with natural selection and variation.

Q. And intelligent design is making essentially the same argument that Dr. Paley made, except that it leaves God out, correct?

A. It doesn't identify who the designer is, okay. But I think the arguments are a little bit more sophisticated based on what we know now compared to what Paley knew.

Q. I'm anxious to discuss that with you, but it is essentially the same argument with God left out, correct?

A. To a degree in terms of addressing nature and asking -- seeing design and asking, is it real or just apparent.

Q. And just let me see if I understand the argument.

A. And it goes back to the Greeks. I mean, this argument didn't initiate with Paley.

Q. I just want to make sure I understand the argument. I'm walking through a field, and I find a cell phone. I pick up the cell phone. I say, that cell phone was obviously designed and, therefore, there must be a designer. That's the inference that I draw. And that's the basic argument of intelligent design, right?

A. That's the argument from Paley using a watch instead of a cell phone, but, yeah.

Q. I thought I'd modernize it.

A. Yeah, okay. Were there any minutes on it?

Q. That's essentially the same argument -- and just in its essence, the core, the reasoning, I'm asking, that's essentially the same argument intelligent design is making, right?

A. I'll agree with that.

Q. And in that argument, we see something created by -- the cell phone is, of course, created by a human, right?

A. Correct.

Q. So the design theorist sees an item that's designed by a human and the theorist knows about the creative and designing capacities of humans, right?

A. Right.

Q. And so it's a very logical inference to say, I know that that was designed by humans. I also know something about the creative or designing capacities of humans. And it's a very logical conclusion to say, that was designed by a human -- designed by intelligence and, therefore, there must be intelligence, right?

A. Correct.

Q. Now when we move into the natural world, things get a little different, because when we -- we don't know when we pick up a natural object whether it was designed by an intelligent agent, right? I mean, I recognize --

A. That's the question. That's the question.

Q. That's the question.

A. That's the question at bay here, right. I mean, we know what it takes to write software for an algorithm for your program to call up a specific routine. I'm saying, when I work with cells and look at the instructions, the algorithm to make a flagellum, it's pretty darn sophisticated.

In fact, it's more sophisticated than anything Microsoft has come up with yet. I know what it takes for software engineers, to a degree, although I'm not one, to write code. And here's a code that's much more sophisticated. Is this a product of the natural random events of chemistry and physics or is there a design

behind it?

When we find information storage systems, in our own experience of cause and effect, day-to-day, by scientific reasoning, standard scientific reasonings, we can say, if we find code, that there's an intelligence associated with it. Again, where there's an alphabet, musical scale, numerals or symbols involved with mathematics, and here we have a true digital scale or code that's more sophisticated again than -- so that's -- yes, that's the argument.

Q. Let's return to that field for just a minute. And this time, let's -- we don't find a cell phone, but instead, we find a mouse. And we pick up the mouse. And we can feel the mouse's heart beating in our hands. And we want to know something about this mouse.

Well, would you agree with me that we don't know -- at the beginning of the argument for design, we don't know who created that mouse, who designed that mouse?

A. Correct.

Q. And we don't know anything about the capacities, desires, intents, or other characteristics of any designing intelligence, correct?

A. Not from looking at the mouse.

Q. And so, therefore, wouldn't you agree with me

that the analogy between the cell phone and inferring the existence of human intelligence is not at all similar to looking at something in nature and inferring the existence of some intelligent agency? Wouldn't you agree with me? That's just not logical?

A. I disagree with you. I mean, you're dealing with a life organism versus an inanimate construct or contrivance by a human. In one sense, yes, they're different. But in terms of teasing them apart and looking at the inner workings of individual cells, I think we can infer, if we see the arrangements of parts for a purpose, that, in our own experience, we can infer design. It's perfectly legitimate. Tell me why it isn't.

Q. Luckily, or unluckily, for you, you're the one answering the questions today.

A. Correct.

Q. Now a few minutes ago, I suggested to you that intelligent design is just a strip down version of Dr. Paley's argument without the reference to God, right?

A. I wouldn't call it strip down. I think it's a little more sophisticated than Paley's original arguments. In fact, I find it interesting that Anthony Flew, who is the leading apologist for atheism in the UK, looking at the arguments from intelligent design,

has decided that atheism is no longer a valid position for him, having, as a philosopher, worked in this area for 60, 70 years. He's in his 80's. It didn't require any religious conversion.

Q. Well, what I'm trying to explore with you, Dr. Minnich, is that -- and we'll talk about molecular biology some more at length in just a few minutes -- but that intelligent design, in its essence, is making, as you agreed with me previously, is making the same essential fundamental argument that Dr. Paley made, except it's not inferring the existence of God, it's just inferring the existence of design, correct?

A. Correct.

Q. And now you said -- and Matt, I'd like you to pull up that slide I just handed you. Second bullet point. You said in your direct testimony that the strength of the inference is quantitative. The more parts that are arranged and the more intricately they interact, the stronger is our confidence in design. Correct?

A. Correct.

Q. Now if I understand your argument, what you're saying is that, and this is what distinguishes your argument from Dr. Paley and the point you were just trying to make a minute ago, is that, you claim that

science has discovered a lot more design than was around in Dr. Paley's time and, therefore, it's fair and logical to revisit this argument, although albeit without the reference to God, correct?

A. Correct.

Q. And, in fact, you say that the inference is quantitative, right? That's the word you used?

A. Right.

Q. That quantitative means, obviously, a quantity?

A. Right. I think it's -- the argument goes from our own experience with machines to the more complex a machine, the more difficult it is to modify.

Q. Well, I'm trying to get Dr. Paley's argument without God up in the modern times to understand it. And at the time that Dr. Paley wrote, there was very complex natural systems known then, correct?

A. Well, qualify that statement for me. What do you mean, in terms of --

Q. I'll give you an example from one of my -- I'd like to think he's an eminent forebear, but I'm not sure. Dr. William Harvey. Do you remember that name?

A. Correct, studied blood circulation.

Q. Right. He discovered the circulatory system for the blood, right?

A. Correct. And actually, he used the design

inference to do it, because he saw the way that the blood system was constructed and looked at it as a plumbing problem really.

Q. And Dr. Harvey died in 1657, didn't he?

A. Correct.

Q. And so at the time that Dr. Paley was thinking about these issues, there were, in fact, some very complicated systems in nature that were known to him?

A. I would qualify that. I mean, they were complicated systems, especially based on the knowledge they had, whether you're talking about the eye, which we still view is very complicated, or circulatory systems. But I don't think -- I don't know what you're inferring.

Q. Well, you said in your direct testimony that there have been developments in the last 30 or 40 years, I forget what you said, in molecular biology that indicate a design that is much more than was previously known, and from that, it's fair to revisit this argument?

A. Well, I think just looking at Dr. Alberts' statement in his article, that his view of the cell as a graduate student, and his statement that we've always underestimated the cell. And that's -- I think that's a true statement.

Q. So there's been something that's happened over

the last 30 or 40 years that, in the scientific world, that causes you and others to revisit the essence of the argument advanced by Dr. Paley?

A. Correct. That's fair to say.

Q. In fact, you claim that's developments in molecular biology?

A. Correct.

Q. And I think you said in your report that we've -- the last 30 or 40 years have been the golden age of molecular biology?

A. Correct.

Q. Now I'd like to know whether there was some event or some -- strike that -- some quantitative measure at which point it became appropriate to revisit the design argument?

A. That's a good question. No, I think it's a culmination of information from a number of different fields and the fact that you're seeing kind of a convergence in physics as well to come to some of these conclusions.

Q. So when we say quantitative as scientists --

A. I'm talking about specific molecular machines in reference to this. I'm not saying that there's a quantifiable number of papers that are going to trip the scale to intelligent design revisited versus our

adherence to evolutionary biology as a sole explanatory source for what we see in nature.

Q. Well, you're also, or you'll admit, there's no quantifiable amount of design. We don't get to a certain amount of design after Dr. Paley and say, there's an objective measure of design, and we passed it, correct?

A. I think you can look and do it comparatively, maybe qualitatively compared to what we know that human engineers design compared to what we find in subcellular systems.

Q. There's no objective measure for design, true or false?

A. I think there is an objective measure for design. I mean, we use it. I think design engineers use it all the time.

Q. There's no objective quantifiable measure for design, true or false?

A. False.

Q. You agree with me -- let's move to a different subject now, Dr. Minnich. You agree with me that evolution is generally accepted in the scientific community?

A. I do, and I think it's a critical subject in my discipline, and I am -- I want to state for the record

that I am fully behind the teaching of evolution, and I think that part of the problem is, we haven't taught it enough and critically enough.

Q. Would you agree with me that, in a public high school, it's appropriate to teach evolution?

A. Absolutely.

Q. Would you agree with me that, at a public high school, it's appropriate to teach all aspects of evolution, including the common ancestry between humans and other species?

A. Absolutely.

Q. Now a few minutes ago, we talked about the positive case for intelligent design, and I'd like to now talk with you about the negative case for intelligent design, right?

A. Okay.

Q. There is a negative case for intelligent design, right?

A. Well, let's discuss it. Tell me what you have in mind.

Q. Well, the negative case for intelligent design, according to you, is based on the inability of evolution to explain the overwhelming appearance of design in nature?

A. Correct, I made that statement.

Q. And have you ever heard of the two-model approach?

A. Yes, I have.

Q. And wouldn't you agree with me that, that negative argument for intelligent design is based on the two-model approach?

A. Not necessarily. I'd qualify it.

Q. Well, you're essentially saying, are you not, that we purport to be able to disprove or challenge evolution, and if evolution is wrong, therefore, it must be intelligent design?

A. No. I'm saying, I think that there are aspects of evolution that are very important in our understanding of nature, and I think intelligent design really addresses the mechanism of natural selection and variation as the generative force behind going from the simple to the complex.

It doesn't address common descent or even macroevolution. I think a lot of us are satisfied with that as well. But we lack the mechanism in the intermediates at this point.

Q. So intelligent design accepts some degree of change over time?

A. Oh, nobody is even debating that.

Q. But intelligent design is also suggesting that

other aspects of the theory of evolution are either wrong or subject to challenge, correct?

A. In the aspect of natural selection and variationism mechanism to drive evolution from the simple to the complex.

Q. And the contention of intelligent design is, if that's true, what you just said, that evolution can't explain that, then that's proof for intelligent design?

A. I think it's consistent with an intelligence behind the complexity that we find in nature. It's a valid argument or derivative from that, yes.

Q. Wouldn't you agree with me that, it logically doesn't follow to say, if one proposition is untrue, that is the propositions about evolution that you purport to challenge, that from that it flows that it must be intelligent design? That's not logical?

A. No, it's perfectly logical. I'm saying that there is -- as I said yesterday, I think natural selection and variation is very important in terms of preservation of phenotypic characteristics. I'm not convinced it can generate the deep complexity of life that we find.

Let me put it this way. If you're a materialist or a naturalist, essentially, you believe in spontaneous generation. You believe that the Earth in its

primordial condition produced all of the pre-cursors that allowed for the assembly of the first replicating organism that was dependent upon those pre-cursor compounds in this soup for its survival, and then turned around and taught itself how to do biochemistry and organic chemistry at a level that's more sophisticated than any chemist on this planet in terms of the specifities of the reactions, the yields, and the overall intricacy of those things.

So that's what -- that's at the level in terms of the logic that we're dealing with here. Okay. Do you believe that?

Q. Well, let's just say, suppose for just a second that the theory of evolution was proved to be wrong today. Then you would agree with me that that is no support whatsoever for the theory of intelligent design, right?

A. No, I would disagree. I would qualify that. If evolution is disproven -- I don't know what you mean by disproven. Common descent, macroevolution, adaptation. No one is questioning adaptational responses of organisms. Spontaneous generation or the first appearance of life, the origin of life.

If that's disproven, then you can infer an intelligence. But that doesn't rule out a natural

cause. All you can say is, there may be an intelligence behind it at some level from the science.

Q. So you would draw from that negative argument about evolution a positive argument about intelligent design? Do I understand you correctly?

A. The positive argument is that we know when we find irreducible -- irreducibly complex systems or information storage and processing systems, from our own experience of cause and effect, that there is an intelligence associated with it.

And so, it is logical to assume, when we find these systems in a cell, if we can -- if the flagellum is irreducibly complex, then, yes, there's an intelligence behind it. That's a uniformitarianism deduction from cause and effect that we know from our everyday today experience.

Q. I'd like to discuss that with you, but it's a long subject, and I think it might be appropriate to take a break right now.

THE COURT: All right. Let's do that. We'll take our mid-morning break at this time. We'll return in about 20 minutes, and we'll pick up Mr. Harvey's examination. Are we on track, Mr. Harvey, to get this witness finished this morning?

MR. HARVEY: Yes, Your Honor. I have every

intention.

THE COURT: With an appropriate time for Mr. Muise to engage in redirect and recross.

MR. HARVEY: Yes, Your Honor.

THE COURT: Do you want to say something?

MR. MUISE: No, I'm just waiting for the, all rise, Your Honor. I'm anticipating the break.

THE COURT: All right. See ya in a bit.

(Whereupon, a recess was taken at 10:15 a.m. and proceedings reconvened at 10:40 a.m.)

THE COURT: All right. You may resume, Mr. Harvey.

CROSS EXAMINATION (CONTINUED)

BY MR. HARVEY:

Q. Dr. Minnich, through the peer review process, I learned that I misspoke in my examination, and that the Snoke-Behe article was, in fact, in the peer reviewed publication?

A. Okay.

Q. That was your understanding, that it was in a peer reviewed publication?

A. It was.

Q. But it doesn't actually mention either intelligent design or irreducible complexity, correct?

A. Right.

Q. And have you read it?
A. I read the abstract.
Q. So you didn't read the actual paper itself?
A. I haven't.
Q. And this morning, I was talking with you about whether there was an objective quantifiable measure for design, and I'd just like to restate the question. Are you aware of any objective quantifiable measure for the design of biological systems?
A. There are a lot of numbers that have been proffered, but they're all based on assumptions in terms of mutation rates and functions. So --
Q. No, I mean, for design. Are there -- there's no objective quantifiable measure for the design of biological systems, in other words, how much design there, is there, correct?
A. Well, that's a good question. You know, not that I'm -- I can't put my hand on a number, but --
Q. I couldn't either.
A. But again, I think -- let's look at it. It's an intuitive --
Q. Let's actually look at slide 13. This is a quote that you used in your direct testimony, and this comes from the paper by Lenski, Pennock and others, correct?
A. Correct.

Q. You focused on last, the highlighted quotation there?

A. I did.

Q. You bolded it as a matter of fact?

A. I did.

Q. Now to be fair, you did read the entire quote, including the sentence before it, but I want to just emphasize it. It does say, quotes, There now exists substantial evidence concerning the evolution of complex features that supports Darwin's general model, close quote. That's in there, correct?

A. These are, again, inferences. I don't know of the step-by-step, you know, mutation, selective scenario for any biochemical pathway.

Q. Right, but that statement is in there?

A. Right.

Q. And now I'd like, Matt, if you could bring up slide 14. And from that article and the quotation that I just read and the entire quotation, you draw the conclusion that we lack intermediate structures, we lack fossils, and we don't have adequate knowledge of how natural selection can introduce novel genetic information, correct?

A. Correct.

Q. Now with respect to fossils, you're not a

paleontologist, right? We already talked about that.

A. I am not a paleontologist. But you read the literature, and that's one of the problems, that the intermediates are not present.

Q. But if a qualified paleontologist came into the courtroom and said, that's not true, you wouldn't be in any position to rebut that, would you?

A. I could look at some of the papers that I quoted, in Morris in particular. I mean, there are some molecular biologists that have hypothesized the lack of intermediate fossils was due to homeotic gene mutations in the production of hopeful monsters in that they never existed to explain why we can't find that. That hasn't panned out. But it's a recognized problem in terms of the fossil record.

Q. Now you said in your direct testimony with respect to intermediate structures, you said yesterday that we don't have the phylogenic history of any biochemical pathway or subcellular organelle?

A. Correct.

Q. The mitochondrion is a subset of your organelle, right?

A. That's correct.

Q. Please turn to Exhibit P-841 in your notebook. That's an article that was published in Science magazine

in March of 1999?

A. Correct.

Q. And that's, of course, one of the leading peer review journals in the world, correct?

A. Correct.

Q. I'm going to ask Matt to highlight some of the -- the third sentence in the abstract, Matt, that begins, gene sequence. You're not aware of this paper, are you, Dr. Minnich?

A. I'm trying to remember if this was one that was mentioned in my deposition.

Q. I think it may have been. But in any event, this says, quotes, Gene sequence data strongly support a monophyletic origin of the mitochondrion from a eubacterial ancestor shared with a subgroup of the alpha-proteo bacteria, closed quotes?

A. Correct.

Q. Then if you would please look at figure 2 in this publication. Matt, could you go to figure 2? And actually, if you could highlight the first sentence. That says that, that neat little chart that we're looking at there is a tree of the phylogenetic relationships among mitochondria and alpha-proteo bacteria, correct?

A. Correct.

Q. So we do have the phylogenetic history of the mitochondrion?

A. No, we don't. This is inferred from sequence comparisons, and there's all kinds of problems inherent with this type of approach that some of the papers I use address this. If you look at ribosome--

COURT REPORTER: Could you slow down, please, and repeat that?

THE WITNESS: Sorry. If you look at -- you can get one phylogenetic tree. If you use some other parameter sequence or protein analysis, you can get another phylogenetic tree. So to say that this is the true phylogenetic history of mitochondria is incorrect.

BY MR. HARVEY:

Q. You've never published that in any peer reviewed scientific literature, have you?

A. No, I haven't.

Q. So you reject what this scientific, these scientists have published in Science magazine in favor of your subjective conclusions that have been published nowhere and shared with none of your scientific colleagues, true or false?

MR. MUISE: Objection, Your Honor. First of all, the question is extremely argumentative. I understand it's cross examination. But -- and it's

assuming evidence that was not introduced into this testimony -- into his testimony. All -- he said, he gave his specific example of why this did not, does not purport to reach what it reached. And then he asked him a question, and we have to go back and review all the additional components he added to it, but it was certainly assuming facts not in evidence.

THE COURT: He asked whether he rejected what the scientists published.

MR. MUISE: That's correct, Your Honor. Then there was the follow-up question is my objection.

THE COURT: No, within the question that you objected to, he asked him whether he disagreed with what the scientists had published.

MR. MUISE: That's a fine question, Your Honor. I have no problem with that.

THE COURT: Then he went on to, in the balance of his question, he then went on to describe his methodology, and it is argumentative, but as you characterize, it is appropriate cross examination, and on that basis, I'll overrule the objection. Do you recall the question?

THE WITNESS: Could you --

THE COURT: We can have it read back.

THE COURT: Wendy, if you would.

MR. HARVEY: Let's see how argumentative it was. I forget.

THE COURT: Don't prompt me. I can reconsider.

(Whereupon, the court reporter read back the referred-to question.)

THE WITNESS: I want to qualify that, Steve. I mean, I can respect this type of work, but remember, when we're studying evolution, we're trying to figure out, you know, from a historic perspective, looking way back in time, and this is one tool that can be used in terms of sequence comparison.

But as I mentioned, and I'm not denigrating the work that these scientists have done. I mean, I respect what they've done. But we have to recognize that these types of studies have been done for the last 30 and 40 years. And as we get more information, it's revised.

My point is, the phylogenetic history, the true phylogenetic history is not revealed in this sequence comparison. It's an inference that may or may not be correct. Okay. And even in this point in terms of whether a prokaryotic organism can evolve into a mitochondria, I don't have any problem with that, you know, in terms of an evolutionary scenario.

I'm just saying, to use this and say, this is, you know, hard fact, this is how it happened, I don't even think these scientists would come to that conclusion solely on this.

BY MR. HARVEY:

Q. Well, they've published this article saying that these are the phylogenetic relationships?

A. Under the criteria that they're using to measure it. Then there are assumptions and inferences built into that, that I'm sure they would, they probably have qualified in this paper someplace. I haven't read it.

Q. So you're not agreeing with these scientists, are you?

A. I'm not disagreeing with them. I'm just saying that this -- when I say, a phylogenetic history, I mean, a true history, a historical account that we actually know. And we may never know it. And this may be the best guess. But that's the point.

Q. So are you looking for detailed explanation and evidence of every step along the way? Is that what you would need before you would accept that?

A. Not to that degree. But, I mean, a consistent history. There's a lot of inference in these types of things, and we've got to recognize that.

Q. These systems evolved, Dr. Minnich, over many

years. Agree?

A. Oh, I agree. That's part of the problem.

Q. Over a billion years, correct?

A. Correct.

Q. And that's part of the problem, your testimony exactly, because it's hard to put together through science precisely what happened over a billion years ago? We don't have a video camera running?

A. This is the problem that we have in terms of studying evolution. As Ernst Mayer says, and I quoted him in my expert report, the normal laws in the natural sciences, experimental sciences don't apply to evolution when we're trying to figure out what happened at a deep distance in time, just built-in assumptions and inferences, and that's what we have.

Q. So the scientific community actually has done a lot of work in these questions of intermediate structures, but it's your testimony, it's just not enough because we haven't gotten far enough, is that correct, in the scientific world, I mean?

A. To a degree. I mean, I would qualify it.

Q. Okay.

A. I mean, again, if you're -- and I'm the first one to say that we look for a natural cause first, but --

Q. We'll come back to that. But you also testified

about biochemical pathways, and you said we don't understand the evolutionary history of any biochemical pathway?

A. A complete pathway. There are adaptational responses that have been reported, and it's good science. You can take a recalcitrant molecule chlorinated by phenol that normally isn't broken down by organisms and expose organisms under selective condition and you can get a modified enzyme that will now cleave off that chlorine or introduce a new -- I mean, there are some slop in enzymes that can broaden in terms of sub straight recognition.

Q. So scientists have been looking at and do know a certain amount about the evolution of biochemical pathways, and that's reported in the peer reviewed scientific literature?

A. Adaptive responses for sure and looking at sequence comparisons of highly conserved pathways like glycolysis or the Krebs cycle. But in terms of the origin of those, we don't have a good history of it.

Q. Well, take a moment to look at what has been marked as P-842.

A. Got it.

Q. You've seen this paper before, haven't you?

A. I have. I think this was in my deposition.

Q. And these are some research from the Air Force Research Laboratory who did some work on the biochemical pathway by which certain bacteria breakdown a substance called DNT?

A. Correct. It's very important.

Q. That's like TNT, except this is dinitroluene, correct?

A. Uh-huh.

Q. These researchers, this was published in a peer reviewed scientific journal?

A. Yes.

Q. And if you look on -- at figure 1, which is on page 113. And Matt, perhaps if you can bring that up for us. These researchers, based on their own original data, have published the organization and evolution of the bacteria that breaks down DNT?

A. Right. This is an adaptational response.

Q. And that's a DNT -- this process by which these bacteria breakdown DNT, that's a biochemical pathway?

A. Correct.

Q. So we do have published information in this scientific literature about the evolution of biochemical pathways?

A. Steve, you're extrapolating from the data here. I mean, not all these enzymes evolved specifically to

break down this compound. I mean, you're mixing and matching enzymes, I'm sure, from pathways that had some other property.

Q. You're not disagreeing with these scientists from the Air Force Research Academy, are you, Dr. Minnich?

A. This is an adaptational response, okay. This is microevolution. I have no problem with that. That's not what we're discussing. These enzymes were present. You probably modified one or brought some in by lateral gene transfer from another system that can attack these problems. I mean, this is critical.

The Air Force is working on this because TNT reservoirs in their munitions dumps are a problem for environment. And, yes, we can take organisms that -- and adapt them by selective pressure to modify enzymes that they have and attack these compounds. I have no problem with that.

Q. Well, you're the one who said, we lack intermediate structures, and now -- and you specifically mentioned subcellular organelles and biochemical pathways, and now we've seen literature that's in the scientific literature that addresses these points exactly. And if I understand your testimony, it's just not -- we just don't know enough to satisfy you that natural selection can drive the evolutionary process?

A. I don't think you understand my position, okay. I mean, this is an adaptational response. This entire pathway didn't evolve to specifically attack this substraight, all right. There was probably a modification of two or three enzymes, perhaps cloned in from a different system that ultimately allowed this to be broken down.

I mean, I've got good colleagues in my own department that are working on the same problem. And I don't think they pretend to know that the evolution of the pathway from start to finish in their system.

Q. There's a lot of work in this area of intermediate structures, isn't that true?

A. Right.

Q. Now if you go to -- well, actually let's just think back for a minute. One of the claims you made in addition to no fossil record and lack of intermediate structures, you also said that we don't have adequate knowledge of how natural selection can introduce novel genetic information, right?

A. The problem -- information is recognized in biological sciences as one of the major areas that we don't fully comprehend.

Q. I'm not talking about the origin of the gene or the origin of the genetic code. We may talk about that,

if we have time later. But you said that we don't have any information -- we don't have adequate knowledge of how natural selection can introduce novel genetic information. That was your testimony, according to that slide, right?

A. That was the purpose of the Lenski paper addressing that specific paper with virtual organisms.

Q. That was your testimony, you say we don't have that, right?

A. It's a qualified statement. You know, I'm not going to make an absolute. Yes, you can get gene duplication. You have the immune system that can generate by cassette shuffling and differential in electron splicing. An incredible amount of diversity.

Q. Please look at has been marked as P-245.

A. Is it up front or --

Q. It's to the front. And we can bring it up in the system.

A. Got it.

Q. Do you have that in front of you?

A. Yes.

Q. You've seen this article before, haven't you?

A. Yeah. I think this was at my deposition as well.

Q. This is an article that was published in Nature Reviews, which is affiliated with Nature, the journal,

and it's by a scientist by the name of Manyuan Long and others, right?

A. Correct.

Q. Manyuan Long is at the University of Chicago, isn't he?

A. I'll take your word for it.

Q. Well, he's a very eminent scientist as well?

A. Right.

Q. He's done a lot of work on the origin of how natural selection can introduce novel genetic information, isn't that true?

A. That's not my specific area, but, right.

Q. And I'd like to just read you a quote from Dr. Long's paper here, the paper with others. The first, not the abstract, Matt, but the first paragraph of this paper.

These scientists say, quotes, Although interest in evolutionary novelties can be traced back to the time of Darwin, studies of the origin and evolution of genes with new functions have only recently become possible and attracted increasing attention.

The available molecular techniques and rapidly expanded genome data from many organisms means that searching for and characterizing new genes is no longer a formidable technical challenge.

Also, molecular evolution and molecular population genetics have provided useful analytical tools for the detection of the processes and mechanisms that underlie the origin of new genes. Do you see that?

A. I see it.

Q. And wouldn't you agree with me that, there is a great deal of scientific information that's published in the literature by Dr. Long in particular, but others as well, on the subject of how natural selection can introduce novel genetic information?

A. Correct.

Q. In fact, this paper cites 122 references. Do you see that?

A. Well, I'll take your word for it.

Q. Now turning to the subject of design engineering, which you covered in your direct testimony. I'm afraid we won't have time to discuss the subject of your testimony in as much detail as I'd like. I'd probably take more than a day, but --

THE COURT: We can only hope not. We'll keep within our time frame.

MR. HARVEY: No, Your Honor, actually we've spoken together, and I'm going to try to stop by 11:30, if not sooner.

THE COURT: All right.

MR. HARVEY: Matt, can you bring up that slide, please?

BY MR. HARVEY:

Q. This is the slide you used in your direct testimony, isn't it?

A. Correct.

Q. And so it's your testimony, as set forth on this slide, the last bullet, that Dr. Alberts advocates incorporating design engineering into our biology curricula as a means to dissect the interactions of the macromolecular machines now identified in even the simplest cell, right?

A. Correct.

Q. Yesterday, you told me that you put your report together in a hurry, didn't you?

A. I did, yeah. I had a time constraint.

Q. Did you have a chance to examine Dr. Alberts -- did you read Dr. Alberts --

A. I read Dr. Alberts' paper and, in fact, if you want to -- I'm inferring this from one section, if you want me --

Q. Yeah. Please, Matt, pull up P-725.

A. Okay.

Q. Now this is Dr. Alberts' paper that you were referring to, correct?

A. Correct.

Q. And if you go to the end of this, the very last page of the paper, Matt, please, of the text. Now you say this paper stands for that Dr. Alberts advocates the incorporation of design and engineering into our biology curriculum.

What Dr. Alberts says actually is, quotes, Most important for the future of our field, the departmental structures at most universities seem to have thus far prevented any major rethinking of what preparation in mathematics, what preparation in physics, and what preparation in chemistry is most appropriate for either the research biologist or the medical doctors who will be working 10 or 20 years from now.

The result is a major mismatch between what today's students who are interested in biology should be learning and the actual course offerings that are available to them. It is largely for this reason I believe that so many talented young biologists feel that mathematics, chemistry, and physics are of minor importance to their career.

It is my hope that some of the young scientists who read this issue of Cell will come to the realization that much of the great future in biology lies in gaining a detailed understanding of the inner workings of the

cells, many marvelous protein machines.

With this perspective, students may well be motivated to gain the background in quantitative sciences that they will need to explore this subject successfully. Do you see that?

A. I do.

Q. He's not talking about design engineering, is he, introducing design engineering into the biology curricula?

A. If you look at the acknowledgments, I am indebted to Jonathan Alberts for his explanations of how engineers analyze machines. On the other part, if I can find the right quote, at the heart of such methods is a simplification and the idealization of a real world machine as a composition of discreet elements.

Engineers recognize certain fundamental behaviors in nature and then create an idealized element to represent each of those behaviors. Most simply, they classify elements as those that store kinetic energy, and those that store potential energy, and those that dissipate energy.

Any particular part of a machine might be modeled as consisting of one or more of these basic constituent elements. It seems reasonable to expect that different, but analogous approaches, could probably be applied to

the protein machines that underlie the workings of all living cells.

This is an engineering approach to looking at the intricate coordinated interaction of molecular machines. And I agree with him. The reason that we need chemistry and physics and mathematics is because these are required rigorously in an engineering curriculum.

Q. But my point was a little different. My point is that, you have rather fundamentally misread Dr. Alberts and fundamentally not stated correctly what he's saying in this paper. He nowhere advocates the incorporation of design engineering into our biology curriculum. He's clearly discussing physics, mathematics, and chemistry. Isn't that true?

A. No, it's not. If you read this paper carefully, he's saying that we have to approach the intricacies of the cellular machines much like an engineer systems analyst approaches the workings in a factory or some other assembly.

Q. We don't have time to read the paper together, but -- so we'll perhaps, later today we can do that. But --

MR. MUISE: Your Honor. The witness has answered the question, and he interrupted him. I'd like to have the witness completely answer the question

before he interrupts him.

THE COURT: Did you finish your answer?

THE WITNESS: I did. I want to say that, I read this paper carefully. I think it's profound, and I agree with Dr. Alberts, you know, as he's saying in here, the age of cloning and DNA sequencing is over. We're going into (inaudible) and the hard core analysis of these machines, and we're going to have to take a different approach. So --

THE COURT: I'm sorry. You can finish.

THE WITNESS: I'm done.

THE COURT: All right. Next question.

BY MR. HARVEY:

Q. Just one final point before we move off this article. On the first page of this -- and, Matt, if you could go to the first page. In the lower left-hand column at the bottom, where it says, ordered movements. And he says, quotes, Why do we call the large protein assemblies that underlie cell function protein machines? Precisely because, like the machine invented by humans to deal, etc. So just to rehit a point that we hit this morning. This is talking about being -- these protein assemblies being like machines invented by humans, correct?

A. That's correct.

Q. Now you claim that intelligent design can be tested, correct?

A. Correct.

Q. Matt, please bring up slide 40. And that's your claim right there that you put up during your direct testimony to state that intelligent design can be tested, right?

A. Right. I think it's falsifiable.

Q. And neither you nor Dr. Behe have run that test, have you?

A. We talked about that yesterday. And I even, I think, gave a -- an experiment that would be doable. And in thinking about it last night, I might try it to see if I can get a type III system to change into a flagellum.

Q. You haven't run that test, right?

A. I've done parts of it. I know that the type III secretory system will secrete flagellum.

Q. True or false, you haven't done that test?

A. No.

Q. Correct? You haven't done that test?

A. What's the point? I mean --

Q. I'm asking you whether you have done the test that you propose for intelligent design? That's a yes or no question.

A. No, I have not.
Q. Okay. Now Dr. Behe hasn't either, has he?
A. I'm not aware of it, no.
Q. And yesterday, Mr. Muise read a statement to you that was read to the Dover High School biology students that said that a scientific theory is a well-tested explanation, correct?
A. That's part of the definition, yes.
Q. And you agreed that, that was the definition of scientific theory, it includes the concept of being well-tested, correct?
A. Again, I would qualify that by saying, we're in a different arena when we're talking about evolution. The experimental sciences aren't necessarily -- can be directive of this. It's a historical science.
Q. I'm just asking you if you agree, just asking you, reminding you and asking you to confirm that yesterday, you said that a scientific theory has to be well-tested, correct?
A. Well-tested or consistent with the information that we have. This, again, I think, in this situation, a lot of evolutionary science wouldn't fit your definition of science as well.
Q. And I take it, you see where I'm going with this. Intelligent design, according to you, is not tested at

all, because neither you nor Dr. Behe have run the test that you, yourself, advocate for testing intelligent design, right?

A. Well, turn it around in terms of these major attributes of evolution. Have they been tested? You know, have they been tested in terms of identifying macroevolution? You see what I'm saying, Steve? I mean, it's a problem on both sides.

Q. Actually, we're going to talk about that in just a minute. But right now, I'm just asking you to agree with me that intelligent design doesn't qualify as a scientific theory, because it's not well-tested, it's not tested at all?

A. I wouldn't say that it isn't tested at all. There's some papers that have been published that deal with some of the questions of evolution and from a design perspective.

Q. You told us, this was the test, didn't you?

A. This specific test, no, has not been done.

Q. Now this test actually is not a test of intelligent design, it's a test of evolution, isn't it?

A. Yes.

Q. And what you're suggesting here is that, scientists should try in their laboratories to grow a bacterial flagellum, to watch it evolve and develop in

their laboratories, right?

A. The point of this point is that, if the flagellum is not irreducibly complex, you should be able to develop one.

Q. In a laboratory?

A. In a laboratory.

Q. Now some scientists live to ripe old ages, right?

A. Yeah, they do. Some don't.

Q. How long have bacteria been on the Earth?

A. Since -- I think 3.8 billion years is the estimate.

Q. So you're suggesting that, to prove evolution, someone should in a laboratory do what it took the entire universe or could have taken the entire universe and billions of years to accomplish, isn't that what you're suggesting?

A. No, not really. This is -- I mean, let's be realistic here. Getting an organism versus an organelle is quite different. And like I said, I would say, take a type III system with a missing flagellar components and see if they can assemble into a functional flagellum. That's a more doable experiment than Mike has proffered here.

Q. Yesterday, you said that evolution cannot explain the origin of life, the origin of the genetic code, or

the structure and development of life. Did I hear you correctly?

A. Correct.

Q. And would you agree with me that those are some fundamental scientific issues?

A. They are.

Q. And they're fundamental scientific issues that have not been answered by science, right?

A. People are working on it.

Q. That's right. Scientists are working on these and many other fundamental questions of science, right?

A. Correct.

Q. Intelligent design can't answer these questions, can it?

A. They can be inferred. I mean, look at it this way. We know that the smallest free living organism, the microplasma, have on the order -- (inaudible) is doing these experiments right now on the order of 350,000 nucleotides in their genome. So to be an independent, free-living organism, you've got to have that much information.

He's doing mutagenesis to find how many genes can actually be knocked out in this smallest free-living organism to determine that irreducibly set of genes required. That's a problem. To be a replicating

organism, you've got to have all this information at a minimum.

Q. You're not aware of any scientists that are trying to use the theory of intelligent design to solve these fundamental scientific issues, are you?

A. I think that -- from a theoretical standpoint, looking at these in terms of developing the questions and the systems to look at. I mean, give us a chance, all right.

Q. None of that research is going on right now, is it?

A. Some of the work. The theoretical work is. I mean, Mike Behe published this paper. Axe published his paper in terms of evolution and proteins. That addresses these issues.

Q. Would you agree with me that a fundamental proposition of intelligent design is that it wants to suggest that an unspecified intelligent agent is responsible for -- let me withdraw that and restate it --

A. Okay.

Q. -- so that you can agree with it. Would you agree with me that a fundamental proposition of intelligent design is that it wants to insert an unspecified intelligent designer as the answer when it

finds questions which science has not yet answered?

A. I would qualify that again, Steve. I guess I can see where that seems to be a leading question. In other words, you're saying, it's an argument out of ignorance. And I don't think it is. Again, it's an argument out of our common cause and effect experience where we find these machines or information storage systems. From our experience, we know there's an intelligence behind it.

Q. So, for example, with the -- with respect to the origin of life -- actually, let's make sure we understand. When we say, the origin of life, we mean the beginning of life on this planet, correct?

A. Right, if it's 3.8 billion years, there was prokaryotes that appeared, and they were independent self-replicating organisms.

Q. Some people refer to this loosely as the prebiotic soup?

A. Prior to that, yes.

Q. Are you saying that intelligent design posits that the source of the origin of life is the intelligent designer?

A. Yes, yes. It doesn't specify who it is. I mean, you can have panspermia, according to Crick, Spores being blown in by solar winds. But I think --

Q. But the scientific answer to the question of the

origin of life or the origin of the genetic code or the development in structure of life is not that the intelligent designer did it, it's that science is still looking at these fundamental scientific questions, working on them, and thinking that, some day, we might have the answers to these questions. Isn't that a scientific approach to that question?

A. Steve, I said yesterday, as a scientist, you always look for a natural answer first. But I have in my hotel room a textbook that I am reviewing on genomes. In there, there is a chapter on the origin of genomes. I wish I had it to read to you. It's all conjecture and assumption and given this, then this. There's not a lot of fact there. Okay.

So this has been a very recalcitrant problem. And we're dealing with again the origin of information. And we know again, from our experience, information-rich systems are associated with intelligence. So we look for a natural explanation, but we're drawing blanks.

Q. So if I understand this, we have fundamental scientific questions, science looks for natural explanations, has many, many scientists working on this, publishing in peer reviewed journals, and doesn't have any definitive answers. Intelligent design says, the intelligent designer did it. That's really what we're

talking about here, isn't it, Dr. Minnich?

A. It goes back to the basic question. The design that we see in nature, is it real or apparent? Okay. Is there a natural explanation for what you're asking? To this point in time, there isn't. Now I don't think that's a negative statement, but I again would emphasize, from our experience of cause and effect, when you have a code, you've got a coder behind it. And this is the most sophisticated code that we're talking about.

Q. Does intelligent design make any scientific predictions?

A. It does.

Q. Like what?

A. Well, I wish I had my computer with me. I've got a whole list of them in terms of predictions that people in this area are working on. My prediction in working on type III secretory systems before was that flagellum could be used as a machine to secrete other than flagellar proteins. Before we even knew what type III secretion systems were, we were predicting that the TTSS was either the flagellum basal body or something that looked exactly like it. That turned out to be true.

Yersinia passasist is non-modal. We made a prediction that it would (inaudible) the organism to express flagellum inside a host cell, and I think we

have good evidence for it. E-coli 0157, very virulent strengths coming out of Czechoslovakia and Germany are non-modal.

I had a bet over a beer with a microbiologist, director of microbiology at the FDA, that the mutation would be in --

COURT REPORTER: Hold on, please.

THE COURT: While she's doing that, we'll think about what the things are that people bet over.

THE WITNESS: I got a beer out of it. So in terms of, you know, junk DNA, I mean, there's some predictions in that area as well. In terms of mutational rates, there's some predictions.

BY MR. HARVEY:

Q. You're referring to work that you do in your laboratory, right?

A. The work, the stuff that I just referred to, yes.

Q. Now you made three claims here in your testimony. You claim that some -- you may have made others, but these are three you've made. You've claimed that some biological systems are irreducibly complex, right?

A. Correct.

Q. And you claim that irreducibly complex systems cannot evolve, right?

A. I didn't say that. I didn't say that.

Q. Well, you're claiming that irreducibly complex systems were intelligently designed, right?

A. It's a hallmark of intelligence. When we find them, by experience, there's an intelligence associate with them. You can have an aboriginal structure, and it can evolve or adapt as required of the organism. And I am not against the fact that the type III secretory system could have been co-opted from the flagellum.

Q. But in your work as a scientist, your day job, if you will, you only -- the only principles you use are the principles of what you call irreducible complexity, right?

A. I think that's -- as I mentioned, that's -- it uses a molecular in terms defining genes involved in a specific system.

Q. And some people in the, who do what you do, would refer to these as knockout techniques, right?

A. Pardon me? I didn't hear.

Q. Some people who do what you do would refer to these as knockout techniques?

A. Correct.

Q. And they're -- the specific techniques are mutagenesis and genetic screen and selections?

A. Correct.

Q. And these are standard techniques used in biology

and microbiology?

A. They go all the way back to Beatle and Tatum.

Q. Would you agree with me, if you ask most scientists who work in the field and use these techniques, if they use intelligent design principles, they would not know what you are talking about?

A. I don't think they would interpret them in that reference. But it's consistent with the idea of irreducible complexity. If these systems weren't irreducibly complex, you know, mutagenesis wouldn't work.

Q. Does intelligent design recognize the age of the Earth?

A. Does intelligent design recognize the --

Q. Yeah, does the intelligent design theory recognize the age of the Earth?

A. I'm not sure what you mean by that question.

Q. The Earth is 4.5 million years old, give or take a year or two, right?

A. Right, I don't have a problem with that.

Q. Does intelligent design theory accept the age of the Earth?

A. Yes.

Q. Are you familiar with Of Pandas and People?

A. I am.

Q. We already looked at that. Please take a look at page 92. It's your understanding that Pandas is a representative of intelligent design, right?

A. Yes, although, as we mentioned before, it's dated.

Q. Matt, if you -- actually, we can pull it up on the screen. Matt, at the lower right-hand corner. The sentence that begins, while design proponents. It says that, While design proponents are in agreement on these significant observations about the fossil record, they are divided on the issue of the Earth's age.

Some take the view that the Earth's history can be compressed into a framework of thousands of years, while others adhere to the standard old-earth chronology. Do you see that?

A. I see it.

Q. So that says that design proponents are split on that topic?

A. There are some young-earth creationists in the intelligent design community.

Q. Does intelligent design tell us how things were designed or created?

A. No, they're inferred.

Q. Does intelligent design tell us how the bacterial flagellum was designed or created?

A. No.
Q. Intelligent design doesn't ask who the designer is, does it?
A. No.
Q. That's a religious question?
A. Correct.
Q. There are no studies or experiments that can be done to find out the nature of the intelligent designer, correct?
A. Correct.
Q. Does intelligent design ask any questions about the abilities of the intelligent designer?
A. Not that I'm aware of.
Q. Is that a religious question?
A. Yeah, I would assume so, right.
Q. And the same with the limitations of the designer. The intelligent design doesn't ask any questions about the limitations of the designer, does it?
A. I'm not sure what you mean by limitations.
Q. Ability to do things or limits on abilities to do things. Does the intelligent design tell us anything about the limits on the abilities of this intelligent designer to design and create?
A. Not that I'm aware of, no.

Q. Does intelligent design tell us when the intelligent designer designed and created life and living things?

A. No.

Q. Do you believe that the intelligent designer intervened at various points in the history of the Earth?

A. Are you asking me personally or from a -- from the intelligent design community? I mean, there's --

Q. From the intelligent design community?

A. I mean, there's positions all over the spectrum.

Q. Is it -- does intelligent design tell us how many designers there are? Is it just one or could it be more?

A. It could be more.

Q. So it could be a whole family of designers, right?

A. I suppose so.

Q. It could be competing designers? We could have one designer who's designing good things and another designer who's designing bad things, right?

A. I don't -- yeah, what's your point?

Q. Well, does intelligent design tell us whether there could be --

A. No, no.

Q. -- both multiple designers? Are they all working for the same purpose? Does intelligent design tell us anything about that?

A. No, it doesn't.

Q. So it's possible that there is an evil designer, isn't that true?

A. The problem of the Odyssey is a theological question. I don't know where you're going with this, Steve. You know, I suppose so. I mean, from our common experience, yeah, technology is double-edged.

Q. Is there any scientific intelligent design research program going on to determine when the designer acted or she acted or they acted; how he, she, or they acted; why he, she, or they acted; or who he, she, or they are?

A. No. No.

Q. Would it be fair to say that intelligent design does not exclude the possibility of a supernatural cause as the designer?

A. It does not exclude.

Q. And, in fact, a designer could be a deity, correct?

A. It could be.

Q. And that would clearly be supernatural, right?

A. Right, but that's -- that would be a

philosophical addition to that science isn't going to take, isn't going to tell us. I think I made that clear.

Q. But intelligent design holds open the possibility that the designer might be supernatural?

A. Flip it around. If you're a true naturalist, then you can use your data to argue for atheism or materialism. So regardless of which side you fall on this question, there are metaphysical implications.

Q. Intelligent design theory specifically holds open the possibility that the designer is supernatural, true or false?

A. True.

Q. Do you agree that the current rule of science is methodological naturalism?

A. Do I agree that that's the --

Q. That's the current rule of science, isn't it?

A. That's a definition of science that has not always been in place. It's the standard technique that we use again looking for a natural cause.

Q. That's the current definition of science and has been for sometime, correct, not definition, the current rule of science?

A. I think the current rule is coming from the Aguillard decision in Arkansas from my understanding.

Q. Well, actually in the scientific world, methodological naturalism has ruled for quite a long time before the Supreme Court made that decision, isn't that true?

A. Right, but I think it's a definition that would perhaps surprise Newton and Keplar and other scientists that have --

Q. And in order for intelligent design to be considered science, the definition of science has to be broadened to consider supernatural causes, true?

A. I want to qualify it. Can I qualify it? Again, if you go back to the basic question, we see design in nature. Is it real or apparent? If you are only going to accept natural causes, then you've just removed half the equation, so you're not going to see it, even if it's staring you in the face. So in that aspect, that's a definitional fiat.

Q. Well, the answer to my question, and I understand you had a qualification, was true. For intelligent design to be considered science, the definition of science or the rules of science have to be broadened so that supernatural causes can be considered, correct?

A. Correct, if intelligent causes can be considered. I won't necessarily -- you know, you're extrapolating to the supernatural. And that is one possibility.

Q. I only have 45 seconds left, Dr. Minnich.

A. Okay.

Q. Would you agree that the theory of intelligent design takes us only as far as needed to prove or to infer the existence of an intelligent designer and then it stops there and that's where theology takes over? Would you agree with that?

A. Philosophy or theology.

MR. HARVEY: No further questions.

THE COURT: All right. Thank you, Mr. Harvey. And we'll have redirect from Mr. Muise.

REDIRECT EXAMINATION

BY MR. MUISE:

Q. Good afternoon, Dr. Minnich. I know you've been up there for a long time, and I'll try to get through this as rapidly as I can, consistent with the court reporter being able to take down my rapid speech.

Dr. Minnich, yesterday you were asked about an article, and I believe it was a -- it was marked as Plaintiffs' Exhibit 853. If you could look on the exhibit binder that you have there. And if I'm referring to the correct one, it's the one that had some explanation of the bacterial flagellum?

A. I remember the paper.

MR. HARVEY: We'd be happy to put them up

there, if that would be helpful.

THE WITNESS: I got it.

BY MR. MUISE:

Q. Do you have that article, sir?

A. 853? Got it.

Q. Is that the one that had the diagram of the bacterial flagellum?

A. Yes.

Q. Now during the questioning by Mr. Harvey, he was comparing the explanation, more likely the description of the bacterial flagellum in that particular article, which, I believe, was described as a creationist article, with your diagram, as he was referring to it. And I have it up here on the slide, and the diagram also is Defendants' Exhibit 203-B.

And I believe you drew some comparisons of how this diagram resembled the diagram in the article as well as the way it's labeled on Exhibit 203-B and the way it's labeled in that article that was described as a creationist article. Do you recall that, sir?

A. I do.

Q. There are similarities in the labeling between the two?

A. Yes.

Q. Now the diagram that he described as your

diagram, where is this diagram from, Exhibit 203-B?

A. It's from a standard biochemistry textbook, because you see down in the right-hand corner, Voet and Voet.

Q. Is Voet and Voet a creationist textbook?

A. No, no. That's the most popular biochemistry textbook.

Q. And the labels that appear on this diagram, are those labels that you put on or are those labels that Voet and Voet regarded or used to describe the aspects of the flagellum?

A. Those are in the textbook.

Q. And those labels that are in the textbook, are those the same labels that the scientific community uses to identify those parts of the flagellum?

A. Yes.

MR. HARVEY: Objection, Your Honor. Leading. I don't mind him leading to develop the testimony, but that's a -- that's beyond developing the testimony, and that's the conclusion.

THE COURT: We'll note that. But he answered the question. I'll overrule the objection, and we'll move on.

BY MR. MUISE:

Q. Sir, in your direct testimony, we referred to an

article by, I believe it's David DeRosier, is that correct? Is that his name?

A. Correct.

Q. It's marked as Defendants' Exhibit 274. And the title of the article was Turn of the Screw, The Bacterial Flagellar Motor. And in your testimony, you referred to a quote, More so than other motors, the flagellum resembles a machine designed by a human, end quote. Was that a direct quote from out of the article?

A. It was.

Q. It David DeRosier a creationist?

A. Not to my knowledge.

Q. And where did this article appear?

A. In Cell.

Q. Cell journal?

A. Right.

Q. Is that a creationist journal?

A. No.

Q. You were asked some questions about peer reviewed articles and whether there's peer review articles that mention intelligent design specifically, and you indicated in your response to Mr. Harvey that there was some risk. What are the risks?

A. I think --

MR. HARVEY: Your Honor, I'm going to object

on the grounds of relevance and hearsay, if that's where he's going.

MR. MUISE: Your Honor, I mean, it's only fair. If he's going to challenge him about articles being in there, and he's claiming there's risks, he has every right to explain what those risks are, to complete the testimony as to why there aren't the intelligent design or calling intelligent design. And I think he's somebody that's in that community that has to publish, and he obviously feels there's risks.

THE COURT: I'll give you some latitude. I'll overrule the objection. You can answer the question.

THE WITNESS: There is risks. I mean, there's career risks involved. Even as -- this paper that I submitted for this conference in Rhodes Greece, we included a section on the philosophical implications of the flagellum. I thought long and hard about submitting that, because of the implications being identified publicly as a design adherence.

In fact, I wrote that when I was in Baghdad, and I was ready to send it and debating whether I would do it. I think I mentioned in my deposition, we came under a mortar attack, and I hit the send button saying, I might not be here tomorrow anyway, so be it. You

know, it is risky business. I think it's risky for me to be at this trial in terms of the fallout that I've had in my own institution.

BY MR. MUISE:

Q. Sir, you were asked a question of who you thought the designer was, and you said your personal opinion was that it was God, is that correct?

A. Correct.

Q. Was that a scientific conclusion or a scientific opinion?

A. No.

Q. Now we've heard testimony in this case that Dr. Ken Miller, one of the Plaintiffs' experts, he testified that God is the architect of the natural law, which he believes is what drives evolution. Is Dr. Miller's non-scientific personal opinion regarding God as being the architect of the laws that drive evolution, is that any different than the opinion that you're offering here?

A. I would -- I'd have to -- I mean, I think Ken and I are in pretty close agreement, except on the degree of intervention from our own personal concept of a God.

Q. But in terms of the nature of the opinion, being a non-scientific claim, is it similar to --

A. Right, right.

MR. MUISE: May I approach the witness, Your Honor?

THE COURT: You may.

BY MR. MUISE:

Q. I'll hand you what has been marked as Defendants' Exhibit 223. Do I have the right number on the front cover there, sir?

A. Yeah.

MR. HARVEY: Your Honor, may he just wait one second while I get the actual exhibit here?

BY MR. MUISE:

Q. Open to page 292, please. And this exhibit is a book, Finding Darwin's God, written by Kenneth R. Miller, correct?

A. Correct.

Q. Would you read the last three sentences on page 292?

A. Starting with, there is grander?

Q. No, what kind?

A. Oh. What kind of God do I believe in? The answer is in those words. I believe in Darwin's God.

Q. So Dr. Ken Miller believes in Darwin's God?

A. That's what he says. I haven't read this book, so I don't know what that means.

Q. Does that claim make evolution a religious

belief?

A. I don't know how to respond to that. I don't think so.

Q. Now Mr. Harvey was asking you questions about the fact that -- he was using terms of construction, creation, building, and in terms of intelligent design, and how life may have first arose. In terms of evolution, at some point, life had to have been constructed, built, or created, is that true?

A. True.

Q. So should we describe evolution as creation-evolution?

A. No, no.

Q. So those sorts of labels are misrepresentative, are they not?

A. Right.

Q. Now you asked some questions about Paley's, Paley's arguments, correct?

A. Yeah, Paley was brought up.

Q. Was he making an argument based on logic or an argument that was theology?

A. It was based on logic, inference to our common experience.

Q. And I believe you said that went back to the Greeks, is that correct?

A. Right.

Q. Now you were given a hypothetical scenario about walking through the woods and tripping over a cell phone, I guess, to modernize the example, according to Mr. Harvey. Do you remember that little discussion you had with Mr. Harvey?

A. Right.

Q. You said, based on, I believe, the nature of that cell phone, you could infer some design, correct?

A. Right.

Q. Now from an evolution perspective then, if you tripped over this cell phone, you would have to conclude that at some point, there was Paley's watch, however many years ago, is that correct?

MR. HARVEY: Objection, Your Honor, continue leading of the witness. This is on issues of the nature of their theory, and I don't think it's appropriate for Mr. Muise to testify in the form of cross examination.

THE COURT: Why don't you rephrase? I think it was somewhat leading. I'm going to give you some latitude because of the time constraints we have placed, but I think that's unduly leading. I'll sustain the objection.

BY MR. MUISE:

Q. From an evolution perspective, if you came across

the cell phone in the woods --

A. I think I understand. In terms of what would the pre-cursor? I mean, there would be -- you know, I don't know if I want to go there.

Q. Would Paley's watch, if it came before in time, necessarily have to be some sort of a pre-cursor under an evolutionary perspective?

A. Yeah, I don't know. I mean, to a degree, when we look at these machines and where they came from, you have to assume that it evolved from some pre-cursor. So it could be in a general sense equivalent to a watch evolving into another machine.

Q. Using that example, has the theory of evolution demonstrated a step-by-step process by which you could have a Paley's watch become a cell phone?

A. No, it hasn't. In fact, I think that's one of the interesting things in the Morris paper. When he looks at something intricate, developmental pathways, he likens it, in terms of one interpretation, as there's a tool box with a given set of tools that can be plugged into the requirements for the specific organism.

It's almost -- it's kind of an analogy to an engineering type of thing. And I think Jim Shapiro refers to that in some of his more recent papers.

Q. Taking that scenario to a living. I think you

used a mouse. You would have to, for example, have a pathway that would develop a bacterial flagellum into a mouse, is that correct?

A. Well, I mean, that's -- the first organisms were prokaryotic, so in terms of the evolutionary history, yeah, you've got to have intermediates that lead to an organism that can contemplate its own existence, I guess.

Q. Do we presently have those pathways?

A. No.

Q. Now are you the only scientist who makes a claim that we don't have an adequate phylogenetic history of a subcellular organelle?

A. No.

Q. Are there others that you had mentioned in your direct testimony?

A. Right. I think we referenced several of them.

Q. Do you recall some of the names of those scientists?

A. Harold, Shapiro. And I think it's even eluded to in the paper by Lenski.

Q. Are any of those scientists intelligent design advocates?

A. No.

Q. Dr. Minnich, you were asked about this summary

slide that I put up here, particularly that third bullet point. We do not have adequate knowledge of how natural selection can introduce novel genetic information. Are you the only scientist that has that particular view?

A. No. I mean, it's an active area of research.

Q. Was that a point that you derived from the Lenski paper that appeared in Nature?

A. Correct.

Q. I believe this article actually appeared in 2003, correct?

A. Correct.

Q. Sir, you were asked the question about methodological naturalism and the definition of science and whether or not the definition of science would have to be expanded to include supernatural causes in order for intelligent design to be considered. Do you recall that testimony?

A. Right.

Q. In what sense were you using supernatural causes in your answer?

A. I think anything above our normal experience.

Q. Using that understanding of supernatural causes, would that include, for example, Francis Crick's hypothesis of direct panspermia?

A. Correct.

Q. And would that also include the program of NASA, the SETI program, Searching For Intelligence?

A. Correct.

Q. Isn't it true, from a scientific perspective, those two that I just mentioned in which you consider as part of the supernatural are actually considered natural explanation?

A. Right, in actuality, it would be.

Q. So in essence, the definition of science need not be changed to actually include intelligent design, is that correct?

A. No.

Q. Is that correct?

A. Yeah, that's --

Q. Is that correct, sir?

A. Correct.

Q. Now when you were talking about extrapolating or making logical inferences based on our common experience to reach a conclusion, a scientific conclusion, you were saying, that's sort of the logical inference that intelligent design makes, is that correct?

A. Correct.

Q. Though I'm hesitant to raise this, I want to revisit the Big Bang. We might as well finish with a bang, Your Honor, since it's the last day.

THE COURT: We've had the flagellum, son of flagellum return, we might as well have the Big Bang.

MR. HARVEY: Let me object on the grounds that any questions about the Big Bang are outside the scope of the cross examination and, I believe, also outside the scope of the original direct.

THE COURT: I'll allow you to try to tie it in.

MR. MUISE: It's regarding the inference, Your Honor.

THE COURT: Why don't you get a question on. Then you can object to the question. The mere mention, although I understand why it has triggered an objection, is not good enough. Let's let Mr. Muise get a question on the floor.

BY MR. MUISE:

Q. Are you aware of the logical inference or the scientific inference that was employed in the Big Bang theory?

A. Right, in terms of extrapolating back from an expanding universe to a point of singularity, but it appears to be like an explosion, from our experience.

Q. Do we have any common experience of universes exploding?

A. No, no. You know, if I could expand just a

little bit in terms of, methodological naturalism can put a stricture on a number of scientific endeavors in terms, as you elude to, the Big Bang. Super strings employs multiple dimensions that are outside of our experience, but it doesn't stop physicists from working on these ideas.

So, you know, there is some latitude in terms of scientific inquiries that are beyond the aspects of methodological naturalism.

MR. MUISE: I have no further questions, Your Honor.

THE COURT: All right. Thank you, Mr. Muise. Final round.

MR. HARVEY: No, Your Honor.

THE COURT: Giving it up?

MR. HARVEY: I'm not giving it up. I think we've made our points.

THE COURT: Giving up your round?

MR. HARVEY: Yes.

MR. MUISE: I think they ought to give up.

THE COURT: I didn't read it that way. Thank you, sir. You may step down. That concludes your testimony. All right, counsel. Let's take the exhibits first, and then we'll decide what we're going to do from here. We have, with respect to Dr. Minnich, we have

D-201-A. Are you ready for the exhibits?

MR. MUISE: Yes, Your Honor. You said, D, correct, Your Honor?

THE COURT: That's correct, D-201 A, which is the CV. D-251, which is the Woese article. D-252 is the Lenski article. D-255 is the Conway article. D-203 is the cover of the magazine or the Cell cover, excuse me. D-253 is the Alberts article. D-254 is the witness's article. D-257 is the Losick and Shapiro article. I don't have other Defendants' exhibits, but I'll take them if you have them, Mr. Muise.

MR. MUISE: I was following in order, and then we kind of went out of order. Did you have 252, Your Honor?

THE COURT: Say it again.

MR. MUISE: Did you have 252?

MR. HARVEY: Yes, he did.

THE COURT: I did take 252. That's the Lenski article.

MR. MUISE: Yes, Your Honor. And 255.

THE COURT: I have that. That's the Conway article.

MR. MUISE: And 274.

THE COURT: 274, I did not have.

MR. MUISE: The DeRosier article, the Turn

of the Screw.

THE COURT: All right.

MR. MUISE: I believe that should be all of them.

THE COURT: All right. Are you moving for the admission of all of those, including 274?

MR. MUISE: Yes, Your Honor.

THE COURT: Objection?

MR. HARVEY: None.

THE COURT: All right. Then all of those exhibits are admitted. On cross, we have P-853, which is the Not So Blind Watchmaker article. All of these are Plaintiffs' exhibits. 845 is the Morris review. 837 is the Nguyen article. 614 is the Minnich -- is the actual expert report of the witness.

284 is the note, bacteria type III secretion system. P-74 is the Sayer article. 852 is the Alberts article. 848 is the Alberts and Labov article. 847 is the Ratliff article. 841 is the Gray article. 842 is the Johnson and Spain article. And 725 is the additional Alberts article.

What's your pleasure with respect to those -- well, first of all, do you have any others, Mr. Harvey?

MR. HARVEY: No, that's it, Your Honor.

THE COURT: Are you moving for the admission of all those?

MR. HARVEY: Yes, Your Honor,

MR. MUISE: We would object specifically to 852. That was apparently some article in the New York Times by Bruce Alberts that we had had --

THE COURT: Was that a letter?

MR. HARVEY: Yes, Your Honor.

MR. MUISE: It was a news article that he had written. We made the hearsay objection. You had him adjust his question, and we're objecting obviously to the article coming in.

MR. HARVEY: Your Honor, withdraw that exhibit.

THE COURT: All right. Then with the withdrawal of that, any objection to the other exhibits, Mr. Muise?

MR. MUISE: No, Your Honor.

THE COURT: All right. Then the remainder of the exhibits as named will be admitted. Save Plaintiffs' 852. On redirect, Mr. Muise, you referred to Defendants' Exhibit 223, which may be in already. I'm not sure.

MR. MUISE: It should be, Your Honor. That's actually one of the books I had spoken with --

THE COURT: That's in, so we're not going to worry about it. Did I miss any exhibits?

MR. HARVEY: Your Honor, just one thing. We're not moving in P-614. That is the expert report.

THE COURT: I wondered about that actually as I looked at it. You don't want to put that in, I didn't assume. Okay. We'll withdraw 614. All right. Now it's just about the noon hour.

And what we must do yet, in addition to hearing your closing arguments, which will be the last thing we do today is, we've got to handle the exhibits, and then have a final word with counsel on your submissions. It's my understanding that you're going to work through the lunch hour on some things that you may not yet have had an opportunity to agree upon, or have you agreed on those things?

MR. MUISE: I think we had the demonstrative exhibits, that issue. I think we pretty much have it worked out. Mr. Walczyk and I have to discuss a few things. We're hoping to get that done and marked properly during the lunch hour.

THE COURT: All right.

MR. MUISE: I think it will be stipulated to. It will be something easy to get into the record.

THE COURT: Then it would be time, it seems

to me, to take that after lunch, and then we'll do that and have a word about some areas that I may want you to highlight in your submissions, and then we'll have the closing arguments at that point.

MR. MUISE: My understanding, too, is, there is going to be some additional argument. Is that what you're talking about the submissions?

THE COURT: The way I see it is this. I want to hear you on, obviously, the demonstrative exhibits. You think you've got that wrapped up or you will have that wrapped up. It appeared to me that, from what I've heard from you and also heard from Liz, is that you seem to have some mechanism on the deposition designations that I can work with, and that seems to be agreed.

If you want to put that on the record, we can put it on the record. We need to hear some argument, final argument. There has been fairly extensive argument as it relates to the newspaper articles in the two York newspapers and their admissibility.

I will tell you that, so that you don't waste the time that you can otherwise use for the exhibits that, as it relates to the editorials and the letters, and to some degree, to some parts of the

articles, and I'll clarify this when we get into the argument, I'm inclined to allow you to, in particular, to allow the Defendants to further brief that as a part of your submission.

I'm not sure that I'm going to rule on the admissibility of the -- I will rule on the admissibility of the articles on the disputed points, that is the statements of, in particular, various board members as reported therein and for that purpose.

As the articles and the editorials and the letters go to the effect prong, I may defer a ruling on that. I'll hear additional argument, if you want to make it, this afternoon. I'm not sure that I'm prepared to rule on that, and you may want to make a submission. Certainly the Plaintiffs have made a submission.

I have that. You may want to incorporate that in your argument that you're going to make. I'm not certain that I want to rule on that this afternoon. But we'll take that and --

MR. MUISE: I think Mr. Walczyk is going to be arguing that part, and I thought my understanding was, the question of the admissibility, and not so much as getting into the effect argument, but that was going to be something --

THE COURT: And that's correct, and that's

precisely why, because I think they're intertwined, and I'll make that clear this afternoon. I'm not so sure that I want to render a ruling on that. I want to allow you every opportunity, and the Plaintiffs, if they choose, to elaborate on that as it goes to the effect of prong. Do you want to say something, Mr. Rothschild?

MR. ROTHSCHILD: Just another issue on the designation that I just wanted to make clear on the record. We are going to submit a list of designations, counter designations, including where there are objections. And we're prepared to submit that. And the Defendants may want to respond that. Another thing, and this is not something quite --

THE COURT: Let me just stop you. But you're going to key that in a way, as I understand it, that I can -- that I can work with it and deal with it outside --

MR. ROTHSCHILD: Right.

THE COURT: -- the ambit of the trial.

MR. ROTHSCHILD: We're going to have page and line numbers and also highlighted transcripts, so it will be fairly reasonably easy to follow. The other thing, and this is something frankly, I think, counsel and I have not discussed.

At least in what Plaintiffs have designated,

there are exhibits, many of which have been introduced in this trial, but some which have not. In particular, we took the depositions of Mr. Buell and Dr. Thaxton. There were exhibits, we think, that have been properly authenticated, and we'll include that in our chart as well.

To be fair to the Defendants, they may not have considered those yet and may want a chance to object to those, and we would hope that that does just happen in the following week.

THE COURT: You're going to include them in what?

MR. ROTHSCHILD: In addition to the highlighted --

THE COURT: In your designations?

MR. ROTHSCHILD: Correct. We will indicate in the chart the exhibits that come in, that were part of the page and line testimony. We'll indicate what the exhibits are, and we probably should look at them, and there may be some that we withdraw. And Defendants, I'm sure, would want an opportunity to respond to those.

THE COURT: Let me ask you this on that point. Do you need more time? I don't have to have that today. Do you need more time than today to get together on that? That's perfectly fine for me.

MR. MUISE: I think perhaps in doing that, part of next week and, I imagine, we had some discussion that perhaps, if we could leave the record open so we can clean this all up, this being a bench trial, through the next week.

THE COURT: That's fine. That's fine.

MR. MUISE: We're going through the findings and testimony and see if there was any exhibits that might have been lost. We've been able to work out a lot of things throughout this trial, so I don't see this being any different.

THE COURT: Inasmuch as my guess is that none of us were planning on laboring through this through the weekend.

MR. MUISE: I don't know, Your Honor. Speak for yourself.

THE COURT: Then I think, to get it right, you should do that. I'm particularly concerned about those exhibits, and you may have exhibits. That way, I get a very accurate recitation of what each of you want me to do, and I can rule that way. So that's not problematic.

In fact, I -- in all seriousness, I can't begin to consider this, won't begin until I get your submissions until I get the findings, and that's about

21 days out, I guess, until I get everybody's findings. I think we're on a 14/7 time frame, something like that. Is that right?

MR. ROTHSCHILD: So you don't want everybody here to be camping out outside the courthouse?

THE COURT: No. No.

MR. ROTHSCHILD: That's right. We have 14 days for initial pleadings, and then 7 days following for responses which, I think, we all agreed was not meant to be a paragraph-by-paragraph response, but simply an opportunity to respond to things selectively.

THE COURT: Right. And so not until that period ends, or at least not until the 14-day period ends, would I need that, and if you get it in within that period of time, that's certainly fine for me.

MR. ROTHSCHILD: One other loose end that I think was largely resolved yesterday. I think Defendants agreed that the Barbara Forrest reports and not-testified-about exhibits would come in for the narrow purposes of her admissibility for the -- for any appellate record, and we would -- we will plan on giving you a list of those exhibits. We'll give Liz a list and, of course, Defendants as well, so you're aware.

THE COURT: Dr. Forrest's report is what exhibit number? Do you have that?

MR. ROTHSCHILD: This would also include the many exhibits, numbered exhibits.

THE COURT: I understand. You mean, the exhibits as referenced in her report?

MR. ROTHSCHILD: Correct. 347 was the first report, and 349 was the supplemental.

THE COURT: So 347 and 349 would come in based on that stipulation, Mr. Muise, is that correct?

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

THE COURT: So we don't have to cover that then this afternoon together with the exhibits. I will consider them for the purposes as stated, is that correct, as part of the record?

MR. ROTHSCHILD: That's correct.

THE COURT: I think that's the appropriate way to handle that. Anything else before we break for lunch?

MR. THOMPSON: Your Honor, may I make a statement? I'm going to be leaving before the afternoon closing arguments, but, as the head of the Thomas More Law Center, I wanted to thank Your Honor on the record for the fair hearing we've had and for all of the indulgences that you've given us, recognizing that we're a firm in Ann Arbor, and we've been coming here.

I wanted to acknowledge your patience and

the fair trial, and at the same time, acknowledge the professionalism and the cooperation that the law firm of Pepper Hamilton has given us, and not only the lawyers, but the support staff. As Your Honor knows, the Thomas More Law Center and the ACLU and the Americans United for Separation of Church and State have widely different views of the establishment clause, but I must say that, both the attorneys for the ACLU and the Americans United for Separation of Church and State have given us the same professional courtesies.

And for that, I wanted to thank you before I disappeared in the afternoon. I've got a long standing commitment to be in the State of Oklahoma. So again, thank you very much, Your Honor.

THE COURT: I understand, Mr. Thompson. It was my intention to recognize counsel, and I will recognize counsel this afternoon. But I certainly appreciate those comments as they relate to the Court, but I also acknowledge and will again acknowledge the very professional and the cordial relations, not only between counsel, but between counsel and the Court.

And your professional demeanor throughout this trial is appreciated. I understand that Mr. Gillen is not feeling well this morning. I hope that he joins us this afternoon.

MR. MUISE: He'll be here, Your Honor. I'll make sure he's here.

THE COURT: I trust that you'll get our friend, Mr. Gillen, rallied in time to make the afternoon session. It would be most unfortunate, having sat through this, if he missed it. But I thank you for that.

MR. THOMPSON: Thank you, Your Honor.

THE COURT: All right. Anything further before we break for lunch? All right. Let's break until, I'll give you an ample opportunity to go through everything and get started this afternoon. We'll comfortably finish this afternoon, and we will reconvene at 1:30 to take up the additional unresolved evidentiary matters and to then conclude the trial with the closing arguments by counsel. We'll be in recess until 1:30.

(Whereupon, a lunch recess was taken at 12:05 p.m.)

CERTIFICATION

I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me on the within proceedings, and that this copy is a correct transcript of the same.

/s/ Wendy C. Yinger
_____
Wendy C. Yinger, RPR
U.S. Official Court Reporter
(717) 440-1535

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