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UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY
CASE NO. 03-4837 (DMC)

UNITED STATES OF AMERICA EX REL. DR. HELENE Z. HILL :

Plaintiffs, :

-v- :

UNIVERSITY OF MEDICINE & DENTISTRY OF NEW JERSEY, DR. ROGER W. HOWELL and DR. AUPAM BISHAYEE, :

Defendants. :

VOLUME I
DEPOSITION OF: DR. ROGER W. HOWELL
DATE: DECEMBER 18, 2008

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A P P E A R A N C E S:

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TRANSCRIPT of the deposition of the above-named witness, called for Oral Examination in the above-entitled matter, said deposition being taken pursuant to Superior Court Rules of Civil Practice and procedure, by and before LORI YUCHT, a Certified Court Reporter and Notary Public of the State of New Jersey, License No. 30X100200400, at the Law Offices of McElroy, Deutsch, Mulvaney & Carpenter, LLP, 1300 Mount Kemble Avenue, Morristown, New Jersey, on Thursday, December 18, 2008, commencing at 9:39 in the forenoon.

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E X H I B I T S

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(Continued)

E X H I B I T S

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D R. R O G E R W. H O W E L L,
residing at 2 Aaron Drive, Millington, New Jersey, having been duly sworn by the Notary, testifies as follows:

DIRECT EXAMINATION BY MR. PINCUS:

Q Dr. Howell good morning. I know I met briefly with you a few moments ago but my name is Sheldon Pincus. I am representing Dr. Hill in this matter that is pending in the United States District Court for the District of New Jersey against the University, yourself and Dr. Bishayee.

Have you ever had your deposition taken before?

A No, I have not.

Q Then let me give you a few ground rules.

Depositions are part of a process known as Discovery. Discovery is a pretrial fact finding exercise that attorneys engage in, it is one of a number of tools that we have available to us.

In this particular one, we have the opportunity to meet with individuals whom we reasonably believe have information, factual information, relevant to the matter in dispute. What it is is essentially a question-and-answer session. The only differences

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are the following: You have been administered an oath. And having done that it is important that you know that you must tell the truth. While we are seated informally around this conference table in your attorney's law office this proceeding has as much seriousness and solemnity as though we were actually in a courtroom. And in fact everything is being taken down by our stenographer, Lori, here today, that is one of the other differences, and will be transcribed into a booklet known as a transcript, which is used by us for various reasons during the course of the proceeding.

That being said what I am going to do is, I'm going to ask you a series of questions and I simply want you to answer them to the best of your ability. I am not here to trick you, I am not here to mislead you. So if you don't understand a question that I ask it is important that you tell me. So if you don't understand a term or something else that I have said please don't hesitate to ask for clarification or repetition because if you answer the question, I am going to assume that you understood that question and you're capable of answering it fully and responsively.

Do you understand that?

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A Yes. But I have a question.

Q Go ahead.

A You know this is a technical subject so there is probably going to be instances where you don't understand. And how will we deal with that?

Q Well, I will have to do some follow-up questions if I don't understand exactly what it is you have responded to me. Okay? We will cross that bridge. But let me just give you these other general questions.

If you need a question repeated don't hesitate. As I said, you may not know the answer to every question simply tell me that. But keep in mind the distinction between not knowing and not remembering. Not knowing means, I can sit here and ask you the same question from now until eternity, you won't be able to answer the question. But if you say, I don't remember, I may be able to jog your memory by orienting you to an event, or events, or to a particular document that may assist you to respond to the question.

During the course of my questioning, your counsel, Mr. Flynn may have an objection to a question. In the event that he does kindly hold your response affording him the opportunity to set

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forth his objection on the record and then will direct you whether to answer the question or not; in other words there may be instances where Mr. Flynn sets forth an objection but he nonetheless directs you to respond to the question, that is just attorneys doing their lawyering thing. But if he says, you can answer the question, you go right ahead and do so.

While I expect this to last awhile it is important that you know that this is not a marathon session and if you need a break, or breaks, I don't want you to be bashful, I want you to tell me if you need to use the men's room, you want something to drink or eat. Please don't hesitate, we will afford you that courtesy.

The most important -- go ahead.

A I will need to take some breaks here and there to conduct business at the school. I'm organizing a symposium and I have to...

Q If you need that let me know and we will do our best. My goal is to finish today if at all possible. And so hopefully, you can attend to your needs while at the same time allowing me to attend to mine.

This isn't a videotaped deposition so

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it is important that you give a verbal response. If you give a gesture, or you're describing something, I may describe it for the record that -- and if I remind you to give a verbal response please don't take offense it is just that we want the transcript to come out accurately insofar as what your response was.

And the last and most important instruction that I can give to you is the following: So we don't get yelled at by Lori in terms of slowing down or -- let me ask my whole question and I will afford you the courtesy of allowing you to give a complete response. And our goal is to cover the ground that we need to cover and have an accurate transcript of what your responses are to my questions.

You feel you will be able to abide by those instructions?

A Yes.

Q You understand them?

A Yes.

Q Do you have any other questions of me in regards to them?

A No.

Q Are you on any medications today that

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would influence your ability to answer my questions fully and truthfully and/or accurately?

A I am on medication. I don't believe that they would influence my ability to answer.

Q You feel comfortable proceeding?
A Yes.
MR. FLYNN: I'd just like to put one thing on so I don't forget to do it later. Because of the science stuff, I'd like to reserve the right to a read and sign. But I will forget later so just put it on there now. Thank you.
MR. PINCUS: Fair enough.
Q Dr. Howell there was a Coulter counter, C-O-U-L-T-E-R, that apparently Dr. Bishayee used during the course of various experimentation that he did in regards to the matters in dispute. I believe that the inventory tag for it, or at least the one that I have identified as something, SN030788. And I have been led to understand that that was discarded at some point in time. Is that correct?
A That is correct.
Q Can you identify for me when it was discarded?
A The unit was discarded sometime in

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2007. The unit -- well, I will let you continue.
Q Why did you discard it?
A It was not functional. It was missing its mercury manometer removed by the technician who installed the new Coulter counter back in 2006 and it was no longer functional.
Q And who was the technician who performed that do you know?
A Performed -- he is from Beckman Coulter. His name is...
THE WITNESS: Lainie, you know who he is, the Beckman Coulter guy? He probably worked in your liquid sinulation (phonetic) counter. He's been there for years.
A It will come to me.
Q B-E-C-K-M-A-N?
A Yes, Beckman Coulter. He used to just be Beckman. He worked for Beckman Coulter and Beckman merged and he became part of the merge, I guess. He just moved -- he just moved the liquid sinulation counter in the cancer center and he's moved it two or three times.
Q If you can think of it, you will identify his name --
A I certainly can get that later, I

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can't think of it right now but...
Q I assume you had to fill out some paperwork insofar as discarding University property?
A Yes.
Q Can you describe for me, you know, what form, or forms, or other documents needed to be filled out in order to dispose of that particular Coulter counter?
A When a disposal is to be made, you

send a request with the University I D numbers to -- what are they called? The people who keep track of all the equipment, I forget what they're called, inventory control, or something like that. So, you send that to them, they send back a list of the items that you have requested to dispose of along with stickers that say discard, I believe is what they usually have. And then -- then from there, you fill out a work order, I believe, to get the materials removed from the premises once you have permission to remove them.

Q Was the fact that this Coulter counter had, or at sometime had, mercury in it had any other requirements insofar as disposal of hazardous waste or chemicals?

A Absolutely. And that is why the

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technician offered -- the installation technician offered to remove the manometer because you can't dispose of the unit without a manometer removed because it's got, I don't know, maybe 50 M L of mercury, or 25 M L of mercury.

Q And I assume when the technician removed the manometer -- is that M-N-E-M --

A Just how it sounds, M-A, manometer.

Q Manometer. Okay.

When the technician offered and did in fact remove the manometer was there paperwork that had to be filled out so that the University knew that mercury was disposed of in a proper function?

A The mercury was disposed through Environmental Health and Safety and that would have been done by Sundeep Schukla.

Q Spell please?

A S-A-N-D-E-E-P. Schukla, S-C-H-U-K-L-A.

Q Okay. And he works for Environmental Health and Safety?

A No, he was a postdoc in the lab.

Q And what type of paperwork would have to be filled out insofar as complying with the

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Environmental Health and Safety requirements?

A We keep -- each lab is required to maintain a location for chemical waste, we have ours in the hood. So anything that requires disposal through E O H S S goes into there. So, he would have put his methanol, his bromodeoxyuridine, he would have put that there and any other chemicals requiring -- they all go in the same bin. We have a plastic bin about yeah big. So, the mercury would have been in that bin as well. We dispose of things not often at all. We let it build up and then we -- then we get rid of the whole batch.

Q And to your knowledge what period of time was the documentation associated with

discarding equipment and/or environmentally sensitive materials be maintained, do you know?
A I don't understand the question.
Q How long do the records of the disposal have to be maintained, if you know?
A I have no idea. Yeah.
Q To your knowledge these records still exist in regard to --
A I would assume that they do, yes.
Q Are you aware of the fact that approximately in April of 2008, I made a request to

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be provided with all of the documentation associated with not only this particular Coulter counter but an inventory of other Coulter counters in your offices?
A Yes. And I produced those documents.
Q When did you do that?
A I don't know, April or whenever it was. I don't remember.
Q You collected all of those materials --
A Some of them. I don't know exactly what got turned over to you but I located -- I requested from Bernie Sarrel, I believe, the list of -- that disposal list.
Q Spell Sarrel please?
A S-A-R-R-E-L.
Q And he is who?
A He is the facilities manager, I think, for planning. I don't know what his exact title is but he basically keeps track of all the research space. And I assume his responsibility also is to monitor the inventory but he doesn't maintain the inventory, I think he just passes the papers from one place to the next.
Q And did you also locate and obtain the environmentally related documentation?

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A No, I did not.
Q Why did you not do that if I may ask?
A Why would I do it?
Q Because it was requested.
A Nobody requested me for Environmental Health and Services about mercury so not that I know of.
Q Well, you said that in regard to this particular Coulter counter there would have been such documentation. Correct?
A Yes, I did.
Q So sitting here as of today, you have never been requested to obtain that information?
A No.
MR. PINCUS: Scott can you explain this please? What is going on?
MR. FLYNN: He doesn't work in Environmental Health and Services.
MR. PINCUS: Yeah. But we made these

requests --
MR. FLYNN: And I have made them to the appropriate people and I have pushed since our last meeting so...
MR. PINCUS: Why haven't I gotten the documents that he said he turned over in April?

MR. FLYNN: That him and I talked about. You are going to get one document today that he did fill out. It is being Bates'd right now.
Q Were there any other documents that you recall were generated insofar as maintaining inventories of any Coulter counters used in your lab and/or the disposal of them that we haven't identified in the course of this questioning?
A Not that I know of. That is the only Coulter counter that was actually purchased and that was purchased when I arrived in 1987 when I first came to the school. All Coulter counters that arrived since then, which -- none of which I have used, were donated by pharmaceutical companies.
Q When they're donated is it correct for me to assume that they become University property?
A In the past, no. More recently yes, at least as far as I know. In the past, no.
Q So when you say in the past can you be more specific by way of a time frame as to when the practice changed?
A That I don't know. But I used to insist that they not be designated as University property in the event that somebody wanted to move

them elsewhere and nobody ever argued with me.
Q So to the extent that your wishes were respected, they would not have been tagged and inventoried?
A Correct.
Q What about if you needed to discard them what would you have done?
A Then we would have requested -- in fact, we still have items that -- small items that aren't tagged, you know. They don't tag every single -- every single item, they go through and look do you want to tag that, this and that? So anything that you want to discard, you have got to fill out a form and ask them to discard and you will tell them it is not -- it doesn't have a University I D number.
Q Okay.
MR. PINCUS: Howell-1 please.
(Exhibit Howell-1, Dr. Bishayee's V79 experiment dated 9/6/99, is received and marked for identification by the reporter)
(Exhibit Howell-2, Dr. Hill's experiment dated 9/6/99, is received and marked for identification by the reporter)

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BY MR. PINCUS:
Q Dr. Howell, I'm going to show you what I have marked for identification as Exhibits Howell-1 and Howell-2. By way of further instruction, you see we placed exhibit stickers on them called Howell-1 and Howell-2. In the course of my questioning, I may also refer you to a series of -- to series of numbers that typically appear in the lower right-hand corner of any page. We put them there with a little machine called a Bates stamper and it helps attorneys keep track of all the paper that oftentimes go back and forth during the course of the case --
A I'm sorry for interrupting. Does this really require a description?
Q You may not be aware of it. If you are familiar with it then I am sure you will be able to respond to my questions. But some people aren't so let's continue. Did that answer your question?
A Yes. I mean, you put a number on the paper. I don't understand why that requires explanation.
Q I will show you Howell-1 and I will show you Howell-2.
A Okay. What would you like?
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Q I'd like you to take a moment to look at them and do you recognize these as documents associated with experiment -- an experiment that was performed by both Dr. Bishayee and Dr. Hill on or about September 6, 1999?
A That appears to be an experiment, yes. That was done in the lab and this one is the same or different? This one is...
Q What I can represent to you is, I believe that the Howell-1 comes from Dr. Bishayee's lab notebook, Howell-2 comes from Dr. Hill's notebook.
A Then why is it called Howell-1? It should be called Hill-2.
Q Because I get to identify the exhibits the way I want not the way you necessarily want.
A Okay.
So this one, I guess, I haven't seen. This one is Hill's? But this looks the same also as that. Twelve noon. Okay. So that is a copy with some of Hill's handwriting. This is Bishayee's writing.
Q Right.
A Okay.
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Q And this, I believe, is from Dr -- Howell-2 is from Dr. Hill's notebook.
A Howell-2, you said is Hill's

notebook. Okay. And this is, I guess, from Hill's notebook. Okay. And further from Hill's notebook. Okay.

Q Do you recognize these documents as the records associated with this experiment that was done by both Dr. Bishayee and Dr. Hill in or -- on or about September 6th, 1999?

A I don't know that Dr. Hill's documents were done at that time. I don't recall seeing these documents at that time.

Q You don't recall. Okay.

Do you recall that in regards to this experiment, the protocol was for purposes of determining whether there was hypoxia in the clusters in Helena tubes that were used in the course of this experiment?

A Repeat the question?

Q Do you recall whether the purpose of the protocol that is set forth on these documents was to determine if there was hypoxia in the clusters in the Helena tubes used to conduct these experiments?

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A I do not recall if the experiment was specifically to look for hypoxia. I know that the reviewers had requested some information from us, or comments from us, in regard to hypoxia.

Q Are you able to determine -- are you able to respond to the question from a review of the protocol?

A Respond to which question?

Q The question that I just asked you.

A I don't think there is any indication here of anything about hypoxia. Do you see anything here about hypoxia? I don't see anything about hypoxia. Let's see acute clusters suspension...

I know that we were trying to get preliminarily data for mutations but I don't see anything here about -- a single word about hypoxia.

Q What do you recall as the purpose of this experiment being?

A Oh here it is, hypoxic versus aerobic clusters. Now, who made this plot?

Q Do you know?

A I don't recall. Is that either Hill or Bishayee, I presume?

Q This is from Dr. Bishayee's lab notebook. You're looking at Howell-1.

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A Okay. I asked who made the plot?

Q Is it reasonable to assume that if this came from Dr. Howell's -- Dr. Bishayee's lab notebook that he constructed the plot?

A Possibly if he is working in conjunction with Dr. Hill. It is also possible that she created the plot, I don't know.

Q You don't have any recollection?

A No, I do not.
Q That is what you're answering me.
Do you recall whether -- can you glean from reviewing these documents that Dr. Bishayee was working on the survival arm of the experiment while Dr. Hill appears to have been working on the mutagenesis arm of the experiment?
A Well here it looks like, in Bishayee's document, there is mention of mutagenesis. So, Bishayee was also involved with the mutagenesis apparently.
And Hill -- what is the date on this one, 9/10? Okay. I don't see the mutation -- oh here. Is this it? Without spending a lot of time, I couldn't tell you if this is mutation or not.
Q Well, I am asking you to.
A I'd have to go back and spend -- you

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know, I can't tell from here if it is -- oh here we go, P100 plate counts, Day 17. Okay. So that might indicate that it was -- let's see.
The protocol from what I see here in Hill's notes only goes to survival.
Q Isn't the protocol for mutation in this experiment the same protocol that you used in later experiments regarding mutation?
A There is no where here that the protocol for mutation is written, at least I don't see it right now. It stops at count colonies. There must be 25 and 250 for this to be a valid data point, that is for survival. So, I don't see any -- anything here that says anything about a mutation protocol.
Q Would you agree, looking at Howell-1, and in particular the page that you're looking at, which is B01...
A 3926.
Q 3926. No, I'm sorry.
A Yes, 39 --
Q 1920.
A 1920.
Q That Dr. Bishayee indicates that this survival experiment was terminated due to

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contamination however, the mutation arm survived?
A Yes. So --
Q You recognize that writing?
A So in Howell-1, yes there is an indication of mutation. And there is an indication of mutation at the end of Howell-1, which is Page 22, or Bates 013926.
Q Two six. Okay.
And specifically what are you referring to where it says mutagenesis arm?
A Mutagenesis, yes. But that is not in Hill's document.
Q If you look at Dr. Hill's document am

I correct that her results in regards to the mutagenesis arm that she was working with showed an increase in the mutants in the resuspended aerated cells as a function of dose?
A Which document you're in now?
Q Howell-2.
A Howell-2. Where at the front page?
Q Yes.
A And you would like to know what?
Q Does her results show an increase in the mutants and the resuspended aerated cells as a function of dose?

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A Aerobic cells according to this plot -- yes there is an increase in mutants as a function of the gamma ray dose. Yes.
Q Am I also correct that the cells that were not resuspended showed no increase in mutants?
A Yes. That is apparently what is shown.
Q Is it fair to say that that suggests that hypoxia existed in the Helena tubes when the cell pellets were not resuspended?
A *Well, one may construe that. But one can also construe that something was done with that experiment that couldn't have been corrected all because -- if you will note there is a negative slope in that curve, which would imply that you would have a factor of infinity essentially for the degree of protection, or if you want to call it that, afforded by the hypoxia, which is completely impossible.*
Q Is that surmised on your part or do you have any facts to bear out the statement that you just made based on --
A Most --
Q Let me finish please, based on your review of the document?

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MR. FLYNN: Objection to form. Go ahead.
A *The oxygen enhancement ratios in the literature as Dr. Hill pointed out are generally somewhere between one and three, would be a typical oxygen enhancement ratio. Her claim was that it couldn't be greater than three. I don't know if she claimed that it wasn't greater than three but three is about the max that has been observed. And if you calculated the oxygen enhancement ratio for her curve it would be infinity.*
Q Looking at these documents, these two exhibits, would you conclude from the results that you have before you that there was hypoxia in the Helena tubes when cells remained in pellets?
A We determined that there was some hypoxia in the pellets and we reported that.
Q Well, I am asking you specifically

about this experiment. I just want to be clear.
A This particular experiment?
Q Yeah.
A *This experiment -- well again, I said here something is clearly wrong with this curve. So, I would not give -- I would not lend any credence to a curve that has a negative slope.*

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MR. PINCUS: I will take those.
(Exhibit Howell-3, Dr. Bishayee's experiment dated 9/20/99, is received and marked for identification by the reporter)

BY MR. PINCUS:
Q Dr. Howell, I am going to show you what I have marked for identification as Exhibit Howell-3. Appears to be the records associated with an experiment performed by Dr. Bishayee on or about September 20th, 1999. Take a moment to review that and let me know when you're ready.
A What was the date on the other one on 1 and 2?
Q September 6th, 1999.
A And this is September 20th. Okay.
Q Or at least that is what it appears to be. You can satisfy yourself by looking at the protocol.
A Okay. So -- and your question was what again?
Q I didn't ask a question yet, I simply asked you to review it and let me know when you're ready for me to ask a question.
A Sure.

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So go ahead.
Q You are familiar with this document?
A I believe so.
Q Does it appear to be all the documents associated with this particular experiment that was commenced on or about September 20th, 1999?
A To the best of my recollection, yes.
Q Am I correct that there was no change in the protocol for this experiment compared to the protocols that I showed you in Howell-1 and 2? You're welcome to look at them if you need to.
A Yes. The protocols appear to be similar on the Howell-3. There are additional details regarding the mutation arm of the experiment, which are not shown in Howell -- what is this one?
Q Howell-1.
A Howell-1.
Q So other than those handwritten comments that you just identified that appear on, I believe, 7896, the protocols are identical?
A Appear to be, yes.

Q And am I further correct that this experiment appeared to be done solely by

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Dr. Bishayee and not also by, or a part thereof, by Dr. Hill?

A That I have no idea about. However, I don't see any of Dr. Hill's writing.

Q Is it reasonable to conclude that the absence of any writing by Dr. Hill from these lab notebooks associated with this experiment that Dr. Hill was not involved in this particular one?

MR. LEONARD: Objection. Asked and answered. You can answer if you can.

A Yeah. You can't tell from -- if the absence of writing whether or not that is the case.

Q Now in Howell-3 there are both survival results and mutagenesis results. Isn't that correct?

A Yes there is survival results.

Q And am I correct that the results show that there was somewhat less killing in this experiment than somewhat fewer mutants for the cells that remained in clusters?

A In suspension there is somewhat less -- wait a minute. In the pellets there is somewhat less killing according to this graph here.

And your question about mutants is what?

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Q That there was somewhat fewer mutants for the cells that remained in clusters?

A I am not sure that it indicates which tubes are which in the writing here but I would like to make sure of this.

Q Take your time.

A As far as I can see there is no indication of which tubes are which.

Q So, you're telling me you can't answer the question?

A So, I don't believe I can answer the question.

Q Fair enough.

Can one conclude from this experiment in Howell-3 that there was some hypoxia noted but not a great deal of it?

A Assuming that the plot -- you know, as I said there is no indication of which one is which, assuming that the plot is correctly representing which ones were in suspension and which ones are in the cluster and it doesn't even say it on the plot. There is nowhere on the plot that it even says it.

MR. LEONARD: Objection. Don't guess. If you can't figure it out by looking at the

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document...

A Ah this one has it. This plot --

Q You are referring to 7892?
A 7892 indicates -- it indicates which one is suspension and which one is pellet. But nowhere in the data that I can see is that indicated. So assuming -- if one assumes that this is correct --
Q That is 7892?
A -- then one would see the plot shows that the pellet is less affected than the suspension. But again there is nothing in the document to say that that data corresponds to the data here.
Q But assuming 7892 is correct can you conclude that there was some hypoxia but not a great deal?
MR. LEONARD: Objection. Objection to form. I don't want you to guess. If you can tell by that data then he is entitled to an answer. But I don't want you giving guesses based on assumptions.
THE WITNESS: Now what is the assumption then because if there isn't a direct indication of which tube is which here then, you

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know, what am I -- what can I say about this?
MR. LEONARD: Nothing.
A Okay. So in the absence -- in the absence of knowledge of a direct connection between the tubes and the data on the plot then I can't make a conclusion because I don't see any connection.
Q Looking at Howell-3 as compared to 1 and 2 how do the results of this experiment compare with the results that were obtained in that experiment?
A There is no survival plot so how am I

going to tell you that?
Q Well what about mutagenesis?
A Mutagenesis plot. Do we have one? I think on the next one there is no mutagenesis plot, which there isn't. So how am I going to tell you that?
MR. PINCUS: One second please.
Q Let's go back and we will come back to this question.
If you look at Howell-3 and if you look at 78B007894, Number 12 in the protocol, does

that assist you in terms of which tube was which for purposes of responding to my earlier question?
A Tubes 1 through 5, yes. And where is

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the next one? And where does it say about Tubes 6 through the other? So it says here that Tubes 1 through 5 are resuspended in 400 microliter and put into the Rainin pipet tip box.
Tubes 1 through 5, according to Item

12, are resuspended in a pellet of 400 microliter and placed into the tubes and then into the Rainin pipet tip box.

Q You wrote these protocols did you not?

A I don't recall if I typed this directly or in unison with Dr. Bishayee. I don't recall.

Q Assuming that the reference to Tubes 1 to 5 are what they say they are and if you assume that Tubes 6 to 10 are unchanged can you respond to my question?

A So, Tubes 1 through 5 would appear to be corresponding to the clusters, according to Item 12. And I don't see anywhere -- so one would have to assume, I guess, that 6 through 10 are the other.

THE WITNESS: Do you see, Dr. Hill, any indication of what --

Q She can't respond. I am asking you to assume that they were unchanged for purposes of

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responding to my question.

A Assuming what was unchanged?

MR. LEONARD: Yeah.

Q Tubes 6 to 10?

A Were unchanged? What does that mean?

Q That 1 to 5 were resuspended and 6 to 10 were the clusters?

A As I said, I see here so far, and we will go through -- right now, I see that 1 through 5, yes appear to be the clusters. And I don't yet see where it says that 6 through 10 -- let's see. Ah yes, Item 13.

Okay. In Item 13 it says one tube for pellet and one for the suspension. Okay. It does not refer to 6 to 10. But one would have to infer that if one was to make that assumption.

Q So would I be correct looking at this that the results show somewhat less killing and somewhat fewer mutants for the cells that remained in the clusters?

A Hang on a moment. I am looking at Item 14.

Top of Tubes 6 through 10.

MR. LEONARD: Shelly, you can't sit and interpret these documents. I mean if she has

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questions then maybe she needs to write them out. But he is reading line by line trying to interpret -- make assumptions.

MR. PINCUS: You don't have to testify for him, John. If he can't answer the question --

MR. LEONARD: He already said he can't.

MR. PINCUS: He has been instructed not to. And I asked him to assume something and I

am simply asking whether he can do it. If he can't, we will move on.

MR. LEONARD: Well then, I am going to tell him not to answer any questions based on assumptions. I mean this -- if you're asking him to do -- make scientific decisions, or interpret scientific data --

MR. PINCUS: How can you instruct him not to respond? Are you objecting as to form? Are you objecting as to privilege?

MR. LEONARD: I am objecting as to form because you're asking him questions based on numerous assumptions we are going through. He is helping you by finding letters in the protocol. She is writing, you know, until she is getting blisters

0038

on her fingers. If you can get the questions right --

MR. PINCUS: Cut the commentary because that is not going to do anything. We will take a five-minute break. Can I use the next room?

MR. LEONARD: Sure.

(Whereupon, a recess was taken.)

BY MR. PINCUS:

Q So, Dr. Howell are you telling me that sitting here and looking at Howell-1 and 2, which you have identified are one experiment, and Howell-3 that you can't compare the results of the experiments for me in any way?

A You asked me to compare the mutation results first of all -- well first of all the survival results, I said there wasn't a plot, I think, in Howell-3 for survival, right? Oh no there is.

Q There is. And you identified that on Page 7892.

A Okay. So what is your question?

Q So are you able to compare the mutagenesis results between the two experiments?

A In 1 and 3?

0039

Q No, 1 and 2 and 3.

A One and two and three?

Q Yeah.

A Okay.

Q Well, 1 and 2 are the same experiment are they not?

A Yes.

Q Okay. So that is why --

A Well at least we think they are, yes.

Q So that is why I was giving you the benefit of both numbers.

A So for mutagenesis -- and I will only look at one. We have here a plot by whom we do not know who made the plot.

Q Tell me what page you're looking at

please?
A I am looking at Page 13921.
Q Okay.
A And I have no mutagenesis plot on the next item to compare with.
Q What about 7891 in Howell-3 the first page? Flip it.
A Okay. So what would you like?
Q Compare the results for me please between the two experiments in regards to

0040

mutagenesis between -- for purposes of our discussion, I believe you were using Howell-1 and Howell-3.
A Yeah. Unfortunately on this page it doesn't say which one is hypoxic and which one is aerobic on this plot here.
So this plot in Howell-1 it tells me which one is supposedly aerobic and which one is hypoxic. Howell-2 or -- Howell-3 excuse me, does not have any labels to tell me which one is which.
Q So, you're unable to answer the question is that what you're telling me?
A Not with that information in front of me.
Q Is there anything else located within the experiment itself, the documents associated with Howell-3, that allows you to respond to the question?
A Okay. Yes there are numerical results on the 7899. So, we should be able to figure out which one is which so...
Q When you're doing it describe the process that you're utilizing please?
A Yes. If you look at Tube 5 maximum

mutants per cell ends in 425, which is --

0041

corresponds to a closed circle on the plot in Howell-3.
Q Which is on 7891. Correct?
A 7891 that is correct.
So, Tubes 1 through 5 correspond to the closed circle tubes, 6 through 10 would correspond to the open square.
Q So does that now allow you to respond to my question insofar as comparing mutagenesis results?
A Let me first make sure that Tubes 1 through 5 are identified, which is -- So, Item 12 suggests that Tubes 1 through -- this is Item 12 on 7894, suggest that those tubes are the clusters. Okay?
That is interesting. So, I just said the closed circles are the clusters, right? And the mutations are higher for them. Let me make sure I have that right.

Q Are you sure that it is not 6 to 10 are the clusters?
A Well here it says, on Bates 7894, Item 12, it says that 1 through 5 are the clusters.
Q But looking at the data that you identified on 7899, you say it is the opposite. Is

0042

that correct? At least what you were reading?
A Tubes 1 through 5 -- now let me see. No, I didn't say it was the opposite.
Tubes 1 through 5 demonstrate the highest number of mutants per cell. So the closed circle would be the clusters according to what is written here.
Q Read Number 12 again on 7894 please?
A Twelve. Tubes 1 through 5 resuspend the pellet in 400 microliter and place all tubes on perforated plate of Rainin pipet tip box.
Usually when we go to the perforated plate of the Rainin pipet tip box that has little holes in it that are about 4 millimeter in diameter, maybe -- maybe a little more than that, maybe 5 millimeter. And the Rainin tube fits into it and there is pictures of those tip boxes somewhere. So a big tube, or any other tube other than those, isn't going to fit in there. So, Item 12 is the Rainin pipet tip box, which would suggest that it is the clusters.
Q It says after 72 hours for Tubes 1 to 5 carefully remove the supernatant and resuspend a pellet in 400-milliliters MEMA and place all tubes on the perforated plate of Rainin pipet tip box

0043

containing ice to maintain approximately 10.5 degrees centigrade.
Did I read that correctly?
A Yes, you did.
Q And you're saying to me that you conclude from that that Tubes 1 to 5 were the clusters as opposed to the resuspension or aerobic?
A I am only saying -- the reason I am not -- the reason I concluded that was because it says that the tubes are put in the perforated plate of the Rainin pipet tip box. So the only tubes that can fit in there are the -- are the cluster tubes.
Q And if you look at 7899 does the data, under the area of mutant colonies, suggest that the tubes that you have identified as the clusters as opposed to the suspended aerobic tubes are the opposite?
A Try me again?
Q The data that you identified on Page 7899 in responding to --
A Okay. These --
Q Does the data that is set forth there suggest that Tubes 6 to 10 are the clusters and 1 to 5 are the resuspended aerobic tubes?

A Where on 7899 does it say that 6
0044
through 10 are the --
Q I am asking. It doesn't say that, I
am asking does the data suggest that to you in any
way?
A The data on Page 7899 doesn't say one
way or the other.
Q You can't extrapolate anything from
this data is that what you're telling me?
A From Page 7899?
Q Yeah.
A It says nowhere on Page 7899 which
tube is which.
Q But you can't extrapolate anything
from the data compared to the graphs as to which
tubes they're referring to. Is that what you're
telling me? That is all you have to ask -- to
answer.
A I told you already that I can tell
you that the data on the graphs 6 through 10, and I
related the values that we were talking about,
point -- the 273 on Tube 10 corresponds to open
square. Okay? I already told you that.
Q Okay.
A Very clearly. And the 425, I told
you very clearly corresponds to the closed circle.
0045
Q Would I be correct that insofar as
your grant application, you relied on Howell-3 as
opposed to Howell-1 or 2 --
MR. LEONARD: Objection to form.
MR. PINCUS: I didn't finish the
question yet please.
MR. LEONARD: Go ahead.
Q To argue that a small amount of
hypoxia would not -- strike that.
Would I be correct that you used the
results...
THE WITNESS: Excuse me.
(Whereupon, a recess was taken.)

BY MR. PINCUS:
Q So, my question to you was am I
correct that you used the results of Howell-3 in
your grant application to argue a small amount of
hypoxia would not interfere?
A Perhaps you could provide me with a
copy of the grant application?
Q Sure.
MR. PINCUS: For our purposes would
you mark this as Howell-4 please?
(Exhibit Howell-4, Page 29 of the
0046
Grant Application, is received and marked for
identification by the reporter)

BY MR. PINCUS:

Q Dr. Howell, I am going to show you what our -- we marked for identification as Howell-4, I am going to represent to you are Pages 29 to 30 of the grant application, the full copy of which I have placed before you just in case you wish to satisfy yourself. But if you look at Howell-4, Bates stamped 122, in particular, Figure 7, am I correct that you used the results of Dr. Bishayee's September 20th experiment in your grant application?

A Interesting. This symbol is wrong.

Q Well isn't it a fact that when O R I reviewed this matter, they indicated that there appeared to be a reversal of the symbology?

A Perhaps you have to show me the review.

Q I don't have that available right now. But you tell me what you said was interesting and then you can respond to the question. You have no recall of having read the O R I report and them indicating something to this effect?

0047

A Can you tell me when the O R I report was delivered?

Q I don't have the exact date available to me.

A Wait. The O R I report or the -- what are you talking about, O R I report? We are talking about a grant review.

Q I am talking about the O R I report that reviewed your grant and the documentation associated with it. Did you ever read any comment about the symbology being the opposite of that set forth in your grant application? Do you have any recollection of --

A In the O R I report?

MR. LEONARD: Objection to form. Did you read the O R I report?

THE WITNESS: Probably a year ago, I believe.

Q Do you have any recollection of reading that?

A Do I have any recollection of reading the O R I report?

Q About the reversal of symbols?

A I would need to see it.

Q And so, you have no recollection

0048

sitting here today. Is that your response?

A I would like to see the report.

Q That is not my question. My question is sitting here today do you have a recollection of reading anything about reversal of symbols?

A I don't recall at this day reading about reversal of symbols.

Q Then you have answered my question.

A Okay.
Q Now, my question to you is did you use the results from Dr. Bishayee's September 20th experiment for purposes of Figure 7 in your grant application that is before you as Howell-4?
A It appeared the data in Howell-3, survival data, appear to be the data that correspond to Figure 7. However, the symbols are not appropriately matched in the figure caption.
Q Fair enough.
Was it important to your hypothesis for the grant regarding nonuniform distribution of radioactivity that your cluster model not be greatly hypoxic?
A *Hypoxic -- the reason for the concern over hypoxia was that that could alter the shape of the curve in a manner which might be similar to that which would occur from nonuniform distribution of radionuclide. That was the concern so...*
Q You responded to my question. Let me have these back please. I will take back all these documents please. Thank you.
(Exhibit Howell-5, Dr. Lenarczyk's V79 experiment dated 10/2/00, is received and marked for identification by the reporter)
(Exhibit Howell-6, Dr. Lenarczyk's experiment dated 12/14/00, is received and marked for identification by the reporter)
(Exhibit Howell-7, Dr. Lenarczyk's experiment dated 5/3/01, is received and marked for identification by the reporter)
(Exhibit Howell-8, Dr. Lenarczyk's experiment dated 5/21/01, is received and marked for identification by the reporter)
(Exhibit Howell-9, Dr. Lenarczyk's experiment dated 6/21/01, is received and marked for identification by the reporter)

BY MR. PINCUS:
Q Dr. Howell, you had a postdoctorate fellow named Marck Lenarczyk working in your lab for a period of time. Is that correct?
A Correct.
Q And do you recall him doing various experimentation associated with the grant that is the subject matter of this dispute?
A Yes, he did experimentation.
Q I am going to show you what we have marked as Exhibits Howell-5, 6, 7, 8 and 9, I am going to represent to you are certain experiments that he has already identified as having performed within your laboratory between October 2, 2000 and June 21, 2001. Okay?
A October 2000 to June '01.

Q Yeah.
A Okay.
Q All right. Let's just make sure that you're in agreement that Howell-5 appears to be an experiment that he did with V79 cells, I understand to be known as a hundred percent experiment on or about October 2, 2000. Do you recognize this document as the documentation associated with Dr. Lenarczyk's experiment?
A No, I don't recognize it because I don't think that I have seen this document.
Q You have never seen -- you were his supervisor and you have never seen this?

0051

A I do not recall seeing this. I see, I think, what is Dr. Hill's writing on here.
Q What about Howell-6, experiment that apparently you did along with Dr. Lenarczyk in or about December 2000. Have you ever seen this?
A I am still looking at Document 5.
Q Okay. Well then let's confine ourselves --
A October when? October 2000?
Q Let's confine ourselves to this document --
A No. I am going to finish --
Q I am. I am confining myself to this document. It appears to be dated October 2, 2000. You see that?
A Yes, I do. I am debating whether I was in the hospital at that time that is what I am trying to figure out. October 2000, '99. No, I was in the hospital in '99. Okay. Go on.
Q So, you're saying you don't recall ever seeing this document?
A I don't recall looking at this document.
Q I am going to note that the Bates stamping comes from your own attorneys. Does that

0052

in any manner refresh your recollection as to whether you have ever seen this document before?
MR. LEONARD: Objection to form.
A Yes. I just don't recall -- I don't recall if I have seen it or not.
Q Now looking at this document however and this experiment, which was apparently performed in your lab, if you would look at the document that is Bates stamped 091453 and 019454 would you agree, looking at the results that are graphed, that insofar as this hundred percent experiment insofar as survival was concerned, Dr. Lenarczyk's results were biphasic?
A Biphasic -- which one?
Q What does this tell you in terms of the results about the amount of killing that occurred during this experiment? Can you glean that

from the data that is set forth?
A I would have to go through and analyze -- reanalyze the whole thing. That is a plot in front me. I have no idea whether or not it represents the data within. I have no idea.
Q You can't answer my question?
A Not without analyzing all the data.
Q Okay. And what would you have to do

0053

for purposes of doing that, sir?
A I would have to go through and calculate -- let's see. What do we have plotted here? I would have to determine the uptake of the cells. Okay? So that would require cell numbers, activity from liquid sinulation counter, I would have to look at the colonies and their dilutions, I would have to go through and analyze the whole thing. It would take a long time.
Q Let's look at Howell-6 please, the experiment that you did along with Dr. Lenarczyk on or about December 14, 2000.
A Okay. December 14. Yep.
Q Does the documentation associated -- does the documentation comprising Howell-6 appear to be all of the documentation associated with this experiment?
A I have no idea.
Q You have no idea?
A How can I tell you if it's all the documentation of the experiment? How would I possibly tell you that?
Q Because you participated in it and they apparently come from documentation provided by your counsel, which previously had been supplied to

0054

the U S Attorney's Office in response to a Subpoena Duces Tecum. And you're telling me, you don't have any recollection as to whether there are any documents that are missing --
A That is not what I told you.
MR. LEONARD: Hang on. Objection. Objection to form. First of all, we represent all the defendants. And insofar as you did not serve each individual defendant with Discovery, you don't know which documents are coming from whom.
B; the fact that documents are produced in no way shape or form represents that it is all the documents related to any particular experiment.
C; this experiment is dated 2000. To ask this man in 2000, a year -- eight years later whether or not what is stapled here represents all the documents in connection to this experiment is an absolute joke.
MR. PINCUS: Okay.
MR. LEONARD: Any other questions?

MR. PINCUS: Yeah, I have plenty.
MR. LEONARD: Let's get to them.
MR. PINCUS: Oh, we will regardless of how long it takes.

MR. LEONARD: Well, you got a day.
MR. PINCUS: I may have more than a day. We had an agreement that we were not confining ourselves to the one-day rule. Is that correct?
MR. LEONARD: Let's go. Let's just move.
MR. PINCUS: Am I correct?
MR. LEONARD: We did unless we are going to do this all day.
MR. PINCUS: No, we had an agreement. Okay?
Q Am I correct that the results of this experiment show that the survival curves were biphasic?
A Again how can I answer the questions without going through and analyzing --
Q Because I'm asking you to look at the graphs --
A Okay.
Q Let me ask the question. You asked me to give you the courtesy of asking a question and I will then give you the courtesy of giving a response.
MR. LEONARD: Move on.
Q Are you ready?

A I am ready.
Q Okay. May I ask my question now without being interrupted?
A Yes, you may.
Q Thank you.
If you look at B019492 --
A Yes.
Q -- the graph that appears in the upper right-hand portion of that document. Does that indicate to you that survival was biphasic?
A *The points on that graph indicate that whatever is graphed is biphasic.*
Q *Thank you.*
And is there any question in your mind that you participated in this experiment with Dr. Lenarczyk?
A *No.*
Q *Thank you.*

Let us look at Exhibit 7 please, Howell Exhibit 7. Do you recall Dr. Lenarczyk performing a hundred percent cluster experiment with tritiated thymidine on or about May 3rd, 2001?
A No, I don't recall him performing an experiment.
Q If you would look at the graphs that

0057
appear on Page 19472, the upper right-hand corner --
A Excuse me, I've got another call.
(Whereupon, a recess was taken.)

BY MR. PINCUS:
Q If you look at the graph appearing at the upper right-hand corner of B019472.
A Yes.
Q Am I correct that the points of that graph suggest that survival was biphasic?
A *Those points on the graph appear to be biphasic.*
Q I show you Howell-8. Do you recognize this document as a 100-percent cluster experiment involving tritiated thymidine that Dr. Lenarczyk performed on May 21, 2001?
A That is what the document says but I don't recall.
Q You don't recall reading this document before sitting here today?
A I don't recall reading this document, no.
Q Okay.
Similarly if you look at the Bates stamp that is dated -- that is Bates stamped 921
0058
would I be correct that the graph in the upper right-hand corner of this document shows -- the points on that graph show biphasic results?
A Which one are you talking about again?
Q 921.
A 921. *No wouldn't suggest biphasic.*
Q What does it suggest to you?
A It looks like expediential.
Q The upper right-hand -- this one here?
A Yes.
Q That is expediential to you? Explain to me why please?
A Because it doesn't have two components. Biphasic means two components. This has one component.
Q What is the minimum survival that the data shows please, the data to the right of the graph?
A The data points on this -- the minimum survival is approximately 50-percent survival.
Q And inasmuch as there is a 50-percent survival that still suggests to you an expediential
0059
result as opposed to a biphasic result?
A Do you understand what biphasic means?
Q Yes, I do.

A Then how can you ask the question?
Q I just did.
A Then it is a ridiculous question to ask.
Q You can't answer it?
A I can answer it. It shows to me a single component. That means expediential not biphasic.
Q Okay. You have responded. Thank you.
I show you what has been marked as Howell-9, experiment that Dr. Lenarczyk conducted on June 21, 2001, a hundred percent experiment involving tritiated thymidine. Are you familiar with this document?
A I don't recall reading this document.
Q If you turn to Page B019627, the upper graph, does that appear to show results that are biphasic?
A Which one am I looking at?
Q B019627.

0060

A Am I in the right -- oh here we go.
Yes that graph appears to be biphasic.
Q And so by biphasic what we are referring to is that insofar as survival there is a decline followed by a plateauing of survival. Isn't that correct?
A There is an initial decline, which has a steeper slope than the second component of the survival curve.
Q Do you have any reason to deny the fact that Dr. Lenarczyk conducted the various experiments that I have just shown you, which we have marked as Howell-5 through 9, in your laboratory?
MR. LEONARD: Objection to form.
Q Do you have any -- I will rephrase the question.
Do you have any basis to deny that Dr. Lenarczyk performed any of the experiments that we have identified as Howell-5, 6, 7, 8 or 9?
MR. LEONARD: Objection to form.
A Do I have a basis?
Q Any factual basis to deny that these experiments were performed in your laboratory by

0061

Dr. Lenarczyk?
A I would need to go and see the original notebooks. And assuming it is his writing then, I guess, I would assume that he did the experiment.
Q But other than that and assuming that they were in his lab notebooks, you have no -- is there any other factual basis on which you can deny that he conducted these experiments?

MR. LEONARD: Objection to form. I don't even know how you'd answer that.
A I am puzzled as to what you're trying to get at.
Q In other words if they're in his lab notebook, you're --
A Are you asking if Marck did experiments in the lab?
Q I am asking if he performed -- do you have any reason to deny that he performed these various experiments that I have just shown you?
MR. LEONARD: Objection to form. I think the problem is, if I can, Shelly, I think the problem is admit or deny.
If these were in his notebook would you assume that he did them?

0062

THE WITNESS: I would assume that he probably did them but I wouldn't have any evidence that he necessarily did them.
Q If he testified under oath that he performed these experiments in your lab would that satisfy you?
A Yeah. If he testified under oath, yeah. I guess that would be satisfactory.
Q Okay. And these experiments appear to be associated with the grant we have been speaking of. Isn't that so?
A Draw the connection for me in what way that they're related?
Q Well it is involving tritiated thymidine and it is --
A Yes, they involve tritiated thymidine.
Q Part of your grant involved doing certain -- a hundred percent experiments associated with tritiated thymidine. Isn't that correct?
A Please provide me with the grant to refresh my memory.
This is -- which one? This is the --
Q Howell-4. This is your grant application.

0063

A Well, I submit lots of grants so this is one of them. So this is --
Q You don't really seriously mean to tell me that you don't know what grant this suit is all about. Is that what you're telling me?
A No. I didn't know which document that you passed to me.
Q Okay. Well why would I give you any other grant given the fact --
A You are giving me all kinds of stuff so, God knows. So anyway this grant, yes, was submitted in 2000. And your question is what?
Q That there were a hundred percent experiments that were conducted in regard to

tritiated thymidine were there not?
A I am going to look because this was dated -- that was acquired many moons ago. Let's see here.
Q That were to be. That were to be performed as part of the grant?
A That were to be performed. Well let me look here.
Yes. To be performed according to the specific gains would be a hundred percent experiments with tritiated thymidine. That is correct.
Q I will take that back, you answered my question. Thank you.
(Exhibit Howell-10, Article, is received and marked for identification by the reporter)
(Exhibit Howell, 11, Article, is received and marked for identification by the reporter)

BY MR. PINCUS:
Q Dr. Howell, I am going to show you what we've marked as Exhibits Howell-10 and Howell-11. Take a moment and tell me if you are familiar with those documents.
A Yes.
Q You co-authored both of these documents. Isn't that so?
A Correct.
Q And the experiments that I showed you a few moments ago, Howell-5 to Howell-9, I think, just so we are clear, they all involved V79 cells. Correct?
A That is what it indicates, I believe. But let me look.

Q And while you're looking please also satisfy yourself that they were all so-called hundred percent experiments. Okay?
A Uh-huh.
This says V79 at the top.
Q You're looking at 5?
A I am looking at 5.
Q And it was a hundred percent experiment?
A Yes it appears to be a hundred percent.
Q Okay. So what about Howell-6 both V79 and 100 percent. Is that correct?
A Okay. So it is certainly indicated as such.
Q Are you satisfied?
A And I will first check the protocol that is written.
Yes it appears to be a hundred

percent.
Q Same questions, Howell-7. Both V79 cells and 100 percent?
A That too appears to be 100 percent.
Q Howell-8 both V79 and 100 percent?
A That also appears to be a hundred

0066

percent.
Q And last, Howell-9. Same question please?
A That appears to be a hundred percent.
Q Now, I'd like you to look at what we marked as Exhibit Howell-10. I will call it the Rapid Communication.
A Could I backup one moment? On all of these documents, just so that is clear for the record, that all of these are typed documents. So, I am making that statement based on a typed document. The protocol is not handwritten it is typed, just for the record.
Q Now if you would go to Howell -- we marked it Howell-10. And I will just refer to it as the Rapid Communication article.
A Uh-huh.
Q And I turn your attention to the document that is Page 91 of that article and what is Bates stamped 402. Would I be correct that in this article, Figure 3 is indicative of the survival of V79 cells as a function of cluster activity of tritiated thymidine?
A Yes.
Q And that insofar as the hundred

0067

percent experiments the results are signified by the use of either of a triangle either shaded or unshaded?
A Yes.
Q And would I be further correct that insofar as this particular graph the survival results of a hundred percent experiments are shown as being expediential?
A Yes.
Q And that they appear to all be the hundred percent survivals are expediential down to about 0.001?
A 0.002.
Q Okay. Why does the line continue then, if I may ask, down to the horizontal axis signified by 0001?
A Because when you use the plotting program when it was plotted, it wasn't selected to terminate at the last data point. There is an option to do that.
Q But you're saying it goes down to 0002?
A The last data point is at 0002.
Q And now if you would for a moment

please go to Howell Exhibit 11, the Free Radical Initiated document. And again if you would go to Page 337 of that article, or what is Bates stamped as 412.

A Uh-huh.

Q Am I correct that Figure 1 in this document also shows the survival of V79 cells in the hundred percent experiments?

A Yes it says a hundred percent, V79.

Q And that would be the line that is -- the data points are represented by what appear to be a line to the far left. Is that correct? How would you describe that for me please?

A Rephrase the question. I don't know what you're asking.

Q Which line on the graph represents those survivals?

A Which survival?

Q Of the V79 cells in the hundred percent experiments?

A Under what conditions?

Q What are you showing here?

A The thing says survival of V79 cells as a function of activities per labeled cell, 100 percent are labeled. And there is various conditions. So, I am asking you, which --

Q You are showing an expediential decline in what I have highlighted on my copy. What condition does that represent? Can you look at what I am showing you please?

A So, you're looking at the left, the steeper curve?

Q That is correct.

A Okay. Which is designated by open squares and open circles. So if we go to the caption is that an open square -- wait a minute. Okay. Open square -- do you have the original? This looks a little odd here. I am trying -- the open square is appearing twice. Let's see.

Q *In any event while you're looking would I be correct that the line that we are observing and discussing shows an expediential decline?*

A *Yes.*

Q *How do you explain the difference in survivals between what is represented in the hundred percent experiments and these two articles and the results of the Lenarczyk experiments that you identified as being biphasic?*

A *I don't have an explanation for why they're different. There are many reasons that there could have been, which I went through with the attorneys not with respect -- not the attorneys what are they called? The federal guys, whatever they're*

called.
Q We will call them the Feds.
A Whatever the --
Q I understand who you're speaking of. So, you don't have an explanation is what, your response?
A I don't have an explanation, no.
Q Not withstanding that you don't have an explanation did you discuss the difference or discrepancy with Dr. Bishayee and/or Dr. Lenarczyk?
A The hundred percent experiments?
Q Yes.
A I don't recall to what extent the hundred percent experiments were discussed.
Q So then just so we can come full circle if you don't recall discussing it with them is it fair for me to say that you don't recall anything --
A Let me.
Q You want to respond again?
A I would like to go back to the previous one.

0071

Q Fair enough.
A What aspect of the hundred percent --
Q As to why the articles are showing an expediential decline and the experiments that I shared with you in regards to Dr. Lenarczyk, and even one that you performed, was showing biphasic?
A I don't recall having that discussion with Dr. Lenarczyk.
Q Or Dr. Bishayee?
A Or Bishayee.
Q And then just so we can just come full circle if you don't recall a discussion is it fair for me to conclude you don't recall anything that either one of those individuals may have said to you about that?
A No, I don't recall.
(Exhibit Howell-12, Dr. Lenarczyk's experiment dated 11/11/00, is received and marked for identification by the reporter)
(Exhibit Howell-13, Experiment dated 11/28/00, is received and marked for identification by the reporter.)
(Exhibit Howell-14, Experiment dated 2/19/01, is received and marked for identification by the reporter)

0072

BY MR. PINCUS:
Q Dr. Howell can you tell me what AL-N cells are?
A Those are a cell line that Marck suggested using upon his arrival.
Q They're Chinese hamster ovary cells. Is that correct?
A I believe a mutant version of them.

Q Where V79 cells are Chinese hamster lung cells?
A Correct.
Q Are the AL-N cells similar to V79 cells to your knowledge?
A Similar? I wouldn't be able to tell you whether or not they're similar. I mean --
Q Why is --
A -- an ovary cell is not similar to a lung cell but...
Q For purposes of conducting the research why did he suggest that you use --
A That I can tell you, he suggested using them and it was an excellent idea. And it wasn't something that we had planned but because it was such a good idea, we pursued it, which was these cells have the capacity to be prevented from forming

0073

colonies depending on what antibiotic you add to the medium. So that would enable one to look at labeled versus unlabeled cells independently.
Q Would one expect them to have -- that is, the AL-N cells, the same or similar properties with respect to their responses to tritiated thymidine as with the V79 cells?
A I have no idea.
Q Did you not form any expectations insofar as electing to use them at the time these experiments with the AL-N cells were done?
A I may or may not have had expectations, I don't recall the reason. They were picked is, we would be able to look individually at labeled and unlabeled, that is the whole purpose.
Q Well insofar as these AL-N experiments that I have placed before you, Howell-12, 13 and, I believe, 14, let's look at them individually if we could.
A Okay.
Q Howell-12 appears to be a 100 percent experiment done with AL-N cells by Dr. Lenarczyk on or about -- appears to say November 11, 2000. Correct?
A November -- yeah, November something.

0074

I mean it is scribbled out. November 10th, I think it is.
Q Yeah. And then there is a Number 11 above. Isn't that correct?
A I don't see an 11, I see a 10.
Q Well 11, 10 is fine for our discussion.
And if you go to the document that is Bates stamped B019553 and insofar as survival does this --
A Got it.
Q I will represent to you, or the data represent to you, that there was biphasic survival?

A Maybe maybe not. Yeah, *I guess you could construe that to be biphasic.*
Q Well do you?
A Yeah just -- but there is one -- I don't know what that data point is up at way above the line, that is obviously an aberrant point. And then there is one data point outside of a pure expediential response.
Q And that is the one --
A That is the one at .6 mili-Becquerel per cell.
Q Now, I am going to show you

0075

Howell-13. It appears to be documentation associated with another AL-N 100 percent experiment that Dr. Lenarczyk performed on or about November 28th, 2000. Correct?
A Yes.
Q And similarly do the results of survival appear to be biphasic?
A You know this particular experiment is extremely puzzling how you can get survivals of two and seven, I think it is. I have no idea. So, you got to wonder about anything in this experiment with a two and a seven. The data is expediential down to, you know, aside from those two points, which are off the deep end --
Q What do they call them wild points?
A Aberrant, I don't know. Whatever you want to call it.
Q Aside from those two that are above the 1.0 line --
A There is one data point, which would suggest that is outside of the realm of expediential, one set of data points at 1.5 mili-Becquerel per cell.
Q So, you're saying that it is biphasic?

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A Based on one data outside, I could not conclude that. You need multiple points to conclude if it is biphasic or not.
Q The minimum survival here is .2061 if you look at Tube 6. Is that correct?
A .2 -- oh where are you now?
Q I am on the first page.
A Oh yes. The number indicated there for this 11/28 experiment is 0.2061.
Q Does that assist you in any fashion in terms of indicating whether this is biphasic or expediential?
A *If you're going to make a conclusion regarding whether or not it is biphasic and we have worked with biphasic curves for years, we attempt to try to have at least three points on the first phase, another three points on the second phase, if we are looking for a biphasic curve. That way, you*

can determine a slope on the second phase. If you have one point on the second phase, you can't determine a slope. I mean, you can but you would have no idea if it has any relevance or not.

Q If I were to represent to you that Dr. Lenarczyk characterized the survival results of this experiment as biphasic are you telling me you

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disagree or agree or what?

A You know all I can tell you is that there is one point outside of expediential. Now if you want to call that biphasic, one would, you know, really -- in order to say scientifically that it is biphasic, you need three points.

Q Okay. I am with you.

And now if we go to Howell-14 do you recognize this as a document associated with a hundred percent AL-N experiment that Dr. Lenarczyk performed on or about February 19, 2001?

A Yeah. There is an experiment here apparently that according to what is typed says that Marck did an experiment that began on February 19th, 2001.

Q Now if you go into the body of that document, to the document that is Bates stamped 865?

A 865. Okay.

Q The upper right-hand chart. Do you agree that these results suggest biphasic survival?

A Yes according to what is plotted.

Q Do you have any recollection -- well strike that.

The hundred percent survivals in these experiments appear to be similar to the

0078

survivals in the V79 experiments that I showed you insofar as being biphasic. Correct?

A The V79's that you showed me, I think -- what was the lowest? I don't recall what the lowest survival was. But in general --

Q In general.

A -- they followed similar patterns in the experiments performed that you showed me, the data books or whatever these are, that you showed me.

Q And again comparing the articles that I shared with you in which the hundred percent survivals are shown to be expediential as opposed to biphasic *how do you explain the discrepancy, or the difference, in these AL-N experiments from what is represented in those articles, if you can?*

A I don't have an explanation.

Q Again as I asked you before do you recall having any discussion with Dr. Bishayee about these three experiments performed by Dr. Lenarczyk either singularly or collectively?

A No, I don't. Not regarding the survival aspects.

Q Do you have any recollection of having any discussion with Dr. Lenarczyk concerning
0079
the survival aspects of these three experiments?
A Of the hundred percent experiments?
Q Of these three AL-N hundred percent experiments.
A Yeah. I am still on -- so can we backup to the previous question?
Q Sure.
A So, we are on AL-N's and I lost track of that.
Q So let me go back and so we are clear.
A Yes.
Q My questions were relating to these three a hundred percent AL-N experiments. And my first question to you was do you have any recollections of having any discussions with Dr. Bishayee regarding the survival aspects of these three experiments?
A No.
Q Are there any documents that would refresh your recollection insofar as such discussions with Dr. Bishayee?
A Not that I know of.
Q Same question in regards to discussions with Dr. Lenarczyk regarding the
0080
survival aspect. Do you have any recollection of discussions with him concerning the survival aspects of these three experiments?
A Not that I recall.
Q Are there any documents that would refresh your recollection?
A Not that I know of.
Q Okay. At this point in time, you know, specifically by the time we looked at the last experiment, which was February 19, 2001, I believe that was Howell-14.
A Are we on V79's now?
Q I am on AL-N's.
A Okay.
Q By the time Dr. Lenarczyk did this last experiment in February 2001 did you form any conclusion that Dr. Bishayee's results were not reproducible?
A February 2001, I don't remember on what date that, you know, any issues were raised. I think it was after February 19, 2001.
Q By that point in time had you formed any conclusions in your mind that Dr. Bishayee's results with regard to the 100 percent survivals were not reproducible?
0081
MR. LEONARD: Objection to form.
A No.

Q Had you formed any suspicions?
MR. LEONARD: Objection to form.
A No.
Q *And you would agree with me would you not that insofar as all the experiments that I have shown you to date regarding the hundred percent experiments, all of the dates of these experiments occurred prior to the time when you met with Dr. Baker -- when you spoke with Dr. Baker, or met with the campus committee, on research integrity?*
MR. LEONARD: Objection to form.
A And provide me with a date that I met with them, I don't recall.
Q Subsequent to April.
A Yeah.
Q Of 2001?
A So --
Q So, you would agree with me that all of these experiments preceded?
A *I believe the latest date we have here is February 19th, 2001 so yes.*
Q Explain to me the process, or protocol, that you had with regard to your postdocs,

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whether it be Dr. Bishayee or Dr. Lenarczyk, as they concluded these experiments. How they came to cross your desk if at all?
A Generally, they would perform the experiment, analyze the data. We compare to whatever data that we had on hand and assemble. Once we thought we had sufficient amount of data to obtain a similar result then we would move forward for publication otherwise, we wouldn't.
Q But *generally speaking can you characterize a time frame in terms of when the experiment the postdocs are doing are concluded when it comes to land on your desk?*
A *That could vary anywhere from days to years.*
Q What about these experiments. Can you in any manner recall how long it was?
A A sub L, I don't even remember landing on my desk. I know that there was some discussions of A sub L in my office of some of the studies, that I do recall we had some discussions. I don't remember if we discussed these. Given that it was February 19th, I would assume not. But I don't remember.
Q Let me take those back so I can keep

0083

track of the three that I just marked.
(Exhibit Howell-15, Experiment dated 7/16/01, is received and marked for identification by the reporter)
(Exhibit Howell-16, Experiment dated 9/27/01, is received and marked for identification

by the reporter)

BY MR. PINCUS:

Q Dr. Howell, I am going to show you what we marked, as Exhibits Howell-15 and Howell-16. You recognize these documents as experiments that you performed on or about July 16, 2001 and September 27, 2001 respectively?

A Yes these are my writing.

Q And am I correct that these documents represent experiments that you performed at the request of Dr. Raveche in the aftermath of the complaint that Dr. Hill --

A Not that I recall.

Q Both of these are a hundred percent experiments are they not?

A They indicate that they're a hundred percent, yes.

Q And were these -- strike that.

0084

And insofar as Howell-15, I want you to go to Page 74555 if you would please?

A Okay.

Q And would I be correct that the minimum survival that you observed insofar as conducting this experiment was -- is represented by what appears to be 210 at 0.3623. Is that correct?

A That appears to be correct.

Q And insofar as the chart that appears in the upper right-hand portion correct that looking at the points of those charts that the results showed survival to be biphasic?

A Again there is one point outside of the expediential, perhaps two. So it is expediential for all but one set of the points. So yeah, I mean maybe you could construe that but you would need more data points to ensure that it is indeed biphasic.

Q I am interested how you construe it however. Can you answer the question?

A I can't make a conclusion based on this.

Q How do the results of this experiment compare with the survival results in the two papers that we reviewed earlier? I am happy to share them

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with you again if you need be.

A I'd have to look at that, yes.

Q I am going to show you again, Howell-10 and 11 -- I'm sorry, 11 and 12, I apologize. So let's first go to -- oh no, no, no it was Howell-10 and 11.

A Okay.

Q So if we go to Howell-10 first and we go to Figure 3 on the document Bates stamped 402, Page 91?

A Yep.
Q Would you compare the results of the experiment that you performed on July 16, 2001 with the results of the hundred percent experiment shown in Figure 3 of Howell-10 please?
A They're different. They're different axes. The X axes is different on them. One is cellular uptake mili-Becquerel per cell the other is cluster activity in kilo-Becquerel.
Q What about insofar as expediential versus biphasic, the kinetics so to speak?
A The article, which has the survival versus the cluster activity, appears to be a single component expediential. The data in Exhibit 15 has most of the data showing expediential with a single

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point appearing not to fit in the expediential line. You might construe two points but one for sure.
Q Well what is the other one that you say one might construe?
A I mean if in the absence of the last point, I would fit that with a pure expediential curve. If I took -- if I put my thumb over that one point and I were going to pick a function to fit that data, I would pick an expediential function.
MR. PINCUS: So let the record reflect that Dr. Howell has his thumb over the point that appears at the far right, a portion of the chart above the horizontal axis, which is denoted at approximately 3.6.
Q Is that correct?
A 3.6. Yes.
Q And that 3.6 by the way corresponds with the minimum survival of that that you identified earlier?
A Correct.
Q But if you include that is it biphasic?
A It may or may not be. I mean, you can't say that it definitively is unless you got at least three points on the far side that second

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phase.
Q I understand your position.
Now let's look if you will please at Howell-16. This is an experiment that you performed on September 27, 2001. Is that correct?
A September 27, 2001. Yes.
Q And this was a hundred percent experiment. Correct?
A A hundred percent, yes.
Q And survivals are shown on 7485. Is that correct?
A 7485. Yes.
Q And would you characterize the survival here as expediential or biphasic?
A That one, I would characterize as

biphasic maybe even triphasic.
Q So it appears that at least in the majority of the experiments I have shown you and I have asked you to comment on the survivals, the results of survival, were biphasic. Is that fair?
A Excuse me?
Q Insofar as the majority of the experiments that I -- hundred percent experiments that I have reviewed with you here this morning where I have asked you to review and comment upon

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survivals, you have characterized those survivals as biphasic rather than expediential. Isn't that so?
A No that is not true. I said that -- and in fact, I am looking at this one more closely. Again there is only one data point outside of what appears to be expediential. Indeed there is a shift of all of the data points relative to unit survival but there is only one data point outside of what would appear to be expediential. So again even with this one scientifically, one couldn't conclude either way. So from a purely scientific standpoint, you can't conclude biphasic.
Q Well isn't the expediential decline at -- represented by the far left portion of the graph where it goes from one down to -- I am going to point it to you that is the easiest, to that point, which, I guess, is zero-point about eight or so -- I am just guessing looking at it upside down.
A Yes.
Q And doesn't one then characterize the biphasic nature of the survival as what goes -- is represented by the points that occur after that?
A *Well in this case what is unusual about this curve is there is no points between the first point and the control. So, you don't know*

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what is going on there. So, you have to ask yourself did the whole curve get shifted for some reason by some systematic error or -- you know, I can't explain why the first point there starts at .2, 3, 4, 5, .6. That is a little odd.
Q But you would agree with me that insofar as the survivals that are represented in Howell, I believe, 10, the Figure 3, these results are different than what was reported in the article. Isn't that so?
A Here.
Q What we were looking at a couple of moments ago, Howell Exhibit 10, Figure 3. And where I had asked you to compare -- let me ask the question in fairness to you. When I asked you to compare the results in -- at least that paper, compare them for me please. Compare the results of the experiment that you performed on September 27, 2001 to the results that are set forth in Figure 3 of the paper that is identified as Howell-2.

A Figure 3 shows the surviving fraction as a function of cluster activity as I indicated before. And this figure in Exhibit 16 plots survival fraction versus cellular uptake in mili-Becquerel per cell. So again, the X axis is

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different between the two.
Q Go to, if you would, let's take Howell-11 please. I am just reaching to assist you here.
And if you go to Figure 1 can you answer the question again please?
A I might be able to. This is Exhibit 11 --
MR. LEONARD: Can I get the question read back to me?
MR. PINCUS: Do you want me just to rephrase it, John?
MR. LEONARD: Yeah.
Q Would you compare the results in regards to survival between the experiment that you performed on September 27, 2001 and the results that are depicted in Figure 1 of Howell-11 please?
A Okay. So normally, we characterize our curves in terms of the 37-percent survival value, or amount of activity, that would be required to achieve 37-percent survival.
Q And what does that mean? Define that in layperson's term please?
A I just did.
Q Okay.

0091

A I just did. The amount of radioactivity, average radioactivity, per cell that would be required to reduce the population to 37-percent survival, more technically that would be the A37, A for activity.
Q Okay.
A So --
Q Don't write on that please.
A Okay. So if I look at this and try to estimate the D37 from this and maybe it is even in a table somewhere.
Okay. A hundred percent so, .8 mili-Becquerel per cell. It says, D37 is .8 mili-Becquerel per cell. And 2037 here it looks like it is about two. So, the D37's are somewhat different.
Q Okay.
A What else would you like me to compare?
Q You answered my question. Thank you.
So would you agree with me that this experiment did not replicate the result that is set forth in the paper?
MR. LEONARD: Objection to form.
A If you look --

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Q It is a very simple question yes or no?

A No.

Q It did not.

A No. I would say that it doesn't tell you that. You have two experiments and you're telling me to say that this doesn't replicate that. I can't make that statement.

Q Why can't you do that?

A Because if you do any two or three or four experiments and look often, the mili-Becquerel per cell can change from experiment to experiment. So, I am not going to conclude, based on the fact that this is 2 mili-Becquerel per cell and this D37 is .8 mili-Becquerel per cell, that I haven't reproduced it. That I am not going to say at all.

Q If a principle investigator cannot replicate published results what is your understanding that that principle investigator should do?

MR. LEONARD: Objection to form. Where?

A That is such a general -- general question. I can't answer the question. You need to be more specific.

0093

Q Do you have any understanding insofar as any obligation on the part of a principle investigator to report the inability to replicate results with the entity that afforded them, or granted to them, the grant monies?

MR. LEONARD: Objection to form. You can answer if you can.

A Do you really think that each and every experiment everyone does, they get exactly the same thing? And each time that they don't, they call and say hey, I didn't get?

Q I am asking you. I get to ask the questions, you just get to answer them.

A I would say that if somebody doesn't get the exact same results no, they would not pick up the phone every time.

Q So, you didn't see any obligation based on the experiments, the hundred percent experiments that we have gone through here this morning, to report the inability to replicate the survival results with the N I H?

MR. LEONARD: Objection. Asked and answered.

A My focus was not as much on the hundred percent experiments with respect to

0094

survival. I was looking to see if there was a mutation response so...

Q *So, the answer was that you did not feel an obligation to report these results.*

Correct?
A No, I did not.
Q Okay.
(Exhibit Howell-17, Experiment dated 12/26/00, is received and marked for identification by the reporter)
(Exhibit Howell-18, Experiment dated 1/15/01, is received and marked for identification by the reporter)
(Exhibit Howell-19, Experiment dated 2/5/01, is received and marked for identification by the reporter)
(Exhibit Howell-20, Experiment dated 6/14/01, is received and marked for identification by the reporter)
(Exhibit Howell-21, Experiment dated 7/5/01, is received and marked for identification by the reporter)

BY MR. PINCUS:
Q Before we move to these when I was

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discussing the hundred percent experiments to you, I asked whether you felt any obligation to report those experiments to the National Institute of Health. Did you report these experiments in any way shape or form to Dr. Baker?
MR. LEONARD: Objection to form.
A No.
Q Dr. Putterman?
MR. LEONARD: Objection to form.
A The hundred percent experiments?
Q Yeah.
A No.
Q Did you report them to the Committee on Scientific Integrity in or about April 2001 to your recollection?
MR. LEONARD: Objection to form.
A No.
Q The answer was no?
A Not to my recollection.
Q Let's start looking at these.
If you look at Howell-17 this appears to be a 50-percent experiment done with V79 cells by Dr. Lenarczyk on or about December 26, 2000. Is that correct?
A Which one, 17 we are at now?

0096

Q Seventeen.
A December 26, 2000 -- yes, Lenarczyk V79's.
Q So was this an experiment looking for a bystander effect?
A I don't know. How can I tell that by looking at this?
Q Well do you recognize it?
A I don't remember it specifically, no.

Q So can you describe what this experiment was?
A If I sit and look at it, I might be able to.
There is no protocol so, I don't know.
Q Let's look at the survivals on Page 900 if you would please?
A Okay.
Q Can you describe the survival in terms of it being expediential, biphasic?
A I wouldn't conclude anything at all about that survival curve because there is four -- essentially four points scattered in various directions so, I wouldn't make any conclusion at all from that.

0097

Q Are you able to compare the survivals with the survivals reported for the 50-percent experiments in the papers, Howell-10 and Howell-11, that we looked at earlier?
MR. LEONARD: Objection to form. You can answer.
A Okay. The only thing that I see that relates to 50 percent is on the first page, which says fraction of cells labeled. And it does say .5. But that is a computation, which is independent of the experiment. Meaning that those were numbers plugged into an Excel spreadsheet.
Q Would it assist you at all to know that Dr. Lenarczyk identified this as a 50-percent experiment involving the V79 cells at the time we deposed him?
MR. LEONARD: Objection to form.
A I don't. How would that help me?
Q I am simply seeking to refresh your recollection.
A As I said, I don't have a recollection. *And the only thing here that says that this is a 50-percent experiment is an entry in an Excel spreadsheet. That is...*
Q Does this survival chart on Page 900

0098

show a bystander effect?
A How can I say that if I don't know if it is 50 percent?
Q Assume it is.
A Assume it is 50 percent. Does it show -- I don't know. I see data points there that say corrected and uncorrected. How can I tell if there is a bystander effect?
Q Are you telling me that you can't answer the question?
A Based on what I see here, I can't answer the question based on what I see on that.
Q Let's go to Howell-18. Do you recognize these documents?

A I may or may not have seen them, I don't recall.
Q Again, I will represent to you that Dr. Lenarczyk represented that these were 50-percent experiments involving V79 cells that he performed on or about January 15, 2001.
A Okay. Again there is no protocol same as before. And I have an entry on a spreadsheet that says .5.
Q Go to Page 906 please.
A Yes.

0099

Q Do these results, assuming this is a 50-percent experiment, demonstrate a bystander effect?
A Again it doesn't even say what the two symbols are. *You can't conclude anything from this. The symbols are defined as corrected and uncorrected.*
Q What about the data to the left of it? Does that in any way assist you?
A The data to the left?
Q Of the chart.
A Okay. So assuming -- you said assuming that there is a 50-percent experiment can I conclude whether or not there is a bystander effect?
Q Yes.
A It would appear that if this is a 50-percent experiment that there is -- *there is no indication of a killing bystander effect in this experiment.*
Q Would you agree then that this result, assuming what you just said, is different than that reported in the papers that we have referred to earlier, Howell-10 or 11?
MR. LEONARD: Objection to form.
A Yes. It looks different than what is

0100

reported, yes.
Q I am happy to share these with you anytime you need to.
MR. LEONARD: Just so we are clear this is all predicated on the assumptions as to what this represents?
MR. PINCUS: That is correct.
Q Okay. Let's go to Howell-19 if you would please. And again, I am going to represent to you that Dr. Lenarczyk identified this as a 50-percent experiment involving V79 cells that he conducted on February 5, 2001.
MR. LEONARD: Shelly just so I'm clear, you can't represent that that is in fact what this is?
MR. PINCUS: I am saying what he testified that is what.
MR. LEONARD: Okay. So, you don't

know that is what that is?
MR. PINCUS: No. I am saying that that is what he testified it was.
MR. LEONARD: I am just trying to be clear.
MR. PINCUS: No, no that is perfectly fine that you say that. But that's what he

0101

testified.
Q So if you look at the survival on Page 894 do those survivals show the bystander effect as I asked you before?
A Okay. So as before this is indicated as a 50-percent experiment on a spreadsheet, which was -- this would have been recorded after the experiment was conducted during the analysis of the experiment. And it says, according to that entry there in the spreadsheet, that it is 50 percent. No protocol is indicated as before and we have -- if we assume that this is a 50-percent experiment then if there is any -- there is a -- perhaps a weak bystander effect in that it looks like the last set -- those two data points at 15 and 20 mili-Becquerel per cell appear to be below a survival of .5.
Q That is the basis on why you say perhaps?
A That is why I would say perhaps, yes.
Q Now if you go to -- if you would please, Howell-20?
A Howell-20. Okay.
Q And again assume Dr. Howell testified that this is a 50-percent experiment --

0102

A Dr. Lenarczyk.
Q I apologize. Dr. Lenarczyk identified that as a 50-percent experiment involving V79 cells that he conducted on June 14, 2001. If you would go to Page 888 do the survivals show the existence of a bystander?
A Let's hold on just a moment. I'd like to backup for a second.
Q Backup to where?
A *Yeah. Did he note anything about the V79's where these came from? I don't see any notation here where these particular V79's came from for that matter in any of these experiments. What V79 cells are these?*
Q I don't know to be able to answer your question here right now.
A Okay. So then for the record, Items -- you know in fact almost every single experiment we have looked at so far, *the source of the V79 is not indicated for the record.*
Q Okay. My question to you is insofar as this document, Howell-20, and the survivals that are depicted on Page 888 of Howell-20, do the

survivals indicate to you, assuming a 50-percent experiment, that there was a bystander effect shown?

A Okay. So for these V79's, which we don't know the whereabouts of, these show -- I should say the source of it -- strike the whereabouts, the source of. Okay? So here there appears to be, based on these data, *no killing bystander effect.*

Q And the last one that I want to review with you and then we will finish up this particular set of questions on these documents is if you go to Howell-21 again, Dr. Lenarczyk identified this as a 50-percent --

A Yes.

Q -- V79 cells on July 5, 2001?

A Yes.

Q Same questions as the survivals that appear on Page 882 show a bystander effect?

A Page 882. If this indeed is 50 percent only one data point indicates a small bystander effect.

Q Which one are you referring to please?

A Data point Number 7.

Q Show me on the chart where you are referring to please?

A I don't know which one is data .7. Let's assume that is ten, nine, eight, seven. It certainly can't be that one.

Q So, you're talking about data .7 would be represented by?

A The table. And it indicates the survival fraction as .47.

Q .4732?

A Yes.

Q What you are referring to?

A Yes. 0.47 --

Q 0.4732. Just wanted to be sure. And would I be correct that insofar as those experiments in which you indicated, based on the assumptions that we made, do not show a bystander effect that differs from the results that were reported in the two papers, Howell-10 and 11?

MR. LEONARD: Objection to form. You can answer.

A Yeah. No these don't appear to be following the same pattern. *There are a few data points here and there which might indicate a small bystander effect. But the pattern appears to be different than what was in the document -- which document did you say?*

Q Ten and 11?

A Ten and 11. Ten and 11.

Q Do you have any facts on which you relied to explain the differences?
MR. LEONARD: Objection to form.
A Facts to explain the differences. Well let's see. What do we have to consider as a fact? I have --
MR. LEONARD: Are you asking for a possible explanation?
MR. PINCUS: No, I am not asking for a possible explanation.
Q Did you conduct any investigation, or did you do anything, to determine why these experiments don't show existence of a bystander effect as compared to what the papers report?
MR. LEONARD: Objection to form.
A I am still not sure what you're asking.
Q And that is exactly what I want you to do. You've identified that those experiments that don't show the bystander effect obviously differ insofar as what is represented and reported in the two papers, Howell-10 and 11, that we have identified here earlier?
A Uh-huh.

0106

Q Is there any factual basis of which you have personal knowledge as to why these experiments did not show the existence of a bystander effect notwithstanding what is reported in those two papers?
MR. LEONARD: Objection to form.
A Yeah. The basis -- the only basis that I have -- would have is that *I know there are variables that are different than at the time, or may have been different, and some that are different than at the time the experiments were done, the original experiments were done.*
Q And those variables did you actually test those variables in any form or fashion?
A Yes. If you look in fact at the last -- one of the variables is source of the cells. And that is why I raised that point earlier, the last document that you raised. In fact, Marck -- I asked Marck to order cells from the American Tissue Type Collection, A T C C so, we wanted to look at another line of V79's because V79's are very well known to have many different versions of them and are known to mutate readily. So, I asked them to look at the A T C C in addition to whatever stocks that we had frozen at the time. And that was one

0107

item that we did to try to determine whether or not cells had a role in it.
Q So the reference that you just made to Howell-21 refreshed your recollection of having discussions with Dr. Lenarczyk regarding the results of these experiments. Is that correct?

MR. LEONARD: Objection to form.
A Now when -- are you referring to a question that you asked earlier?
Q Well, I am saying does your identification of the reference, A T C C on Howell-21, refresh your recollection as to whether these experiments -- let me ask the question please. Whether these experiments, Howell-17 to 21, individually or collectively, were discussed with Dr. Lenarczyk?
MR. LEONARD: Objection to form.
A Why are you using the word refresh? Why -- what does the choice of the word refresh mean?
Q Because before, you said you weren't sure whether you could identify these documents or not. So, I will ask you the question this way --
A And that is still correct.
MR. LEONARD: I don't think that has

0108

anything to do with the discussion about what he did as opposed to just looking at documents to say --
MR. PINCUS: I will ask the question again. Question withdrawn. Let's just try to move this along.
Q Did you have any discussions with Dr. Lenarczyk regarding the experiments, which we have marked for identification, as Howell-17 to 21?
A I will note the following. The previous time that you asked me that was about the hundred percent --
Q I am not asking about the hundred percent so let's not go there. I am asking you --
A This is a fresh question.
Q I am asking about these experiments, these 50 percent, Howell-17 to 21.
A Yes. So -- okay. So did I have any discussion with Lenarczyk? Yes, I am sure that I did. Because that was the reason for ordering the A T C C's.
Q When did you have that discussion, or discussions?
A I don't remember.
Q Are there any notes that you have that would refresh your recollection as to when the

0109

discussion, or discussions, took place?
A No there are not.
Q Tell me the substance of the discussion as best you can recall that occurred between you and Dr. Lenarczyk?
MR. LEONARD: Objection to form.
A Yeah. I don't recall.
Q You don't recall the substance of the discussion?
A What does substance mean?
Q If you can't relate to me

word-for-word, you can talk -- you can relate to me what the general subject matter --

A The general subject obviously must have been the, we should look at other possibilities in terms of sources of V79 cells and they may have changed.

Q Was there anyone else present at the time you had this discussion with Dr. Lenarczyk?

A I have no idea. I don't recall.

Q Did you have any discussions regarding these experiments, Howell-17 to 21, with Dr. Bishayee?

A I may have had regarding because I believe he was aware also of the testing of the A T

0110

C C. But I don't recall clearly.

Q So we are clear when you respond to a question you may have had well anything is possible, I am asking whether you have a recollection or not of such a discussion, or discussions?

A I don't recall if Bishayee was in on the A T C C discussion, I don't recall. But I would guess that he was.

Q I don't want you to guess.

A Okay.

Q Do you have a recollection of him being in on it?

A Not that I recall.

Q Aside from the A T C C discussions did you discuss these series of experiments with him, Dr. Bishayee?

A Let's see these are -- yes. Only to the extent -- yes. And that we -- we did have a discussion as to why we weren't getting a similar response as we got before.

Q Do you recall when that discussion took place?

A No, I don't.

Q Are there any documents that would refresh your recollection insofar as when that

0111

discussion took place?

A No -- or, I should say, strike that. Not that I know of.

(Whereupon, a lunch recess was taken.)

(Exhibit Howell-22, Experiment dated 11/20/00 is received and marked for identification by the reporter)

(Exhibit Howell-23, Experiment dated 11/28/00, is received and marked for identification by the reporter)

(Exhibit Howell-24, Experiment dated 2/15/01, is received and marked for identification by the reporter)

BY MR. PINCUS:

Q All right. Dr. Howell, I am going to show you what I have marked as Howell-22. Take a moment to review this. This appears to be a 50-percent experiment done with AL-N cells by Dr. Lenarczyk on or about November 20, 2000. Do you recognize that document?
A I don't recall looking at this document.
Q Well again, I will indicate to you

0112

that during the course of his deposition, Dr. Lenarczyk identified having performed this experiment.
Insofar as survival as I have asked you for, if you look at the page Bates stamped 19978 please. And insofar as the chart does this indicate to you the existence of a bystander effect?
MR. LEONARD: You know what let me just put on the record, Shelly, that although it is stapled together this looks like the Bates number comes from two different sources. So, I am not altogether sure that these pages even go together.
MR. PINCUS: As I say these were -- if you compare these to the exhibits that were shown to Dr. Lenarczyk during the course of his

deposition, he identified it as being the documentation associated, you know, with these.
MR. LEONARD: I don't think that is -- I think he identified the pages, his name --
MR. PINCUS: You can note your objection.
Q But again, I was calling your attention to B019978.
A One other thing of note it is interesting though that this date here is crossed

0113

out on the first page and 11/20 is penned in and then here it is, 11/20.
Q Uh-huh.
A So that may be the source of your --
MR. LEONARD: Yeah.
A -- question.
Q All right. Now will you respond to my question in regards to the survival charts whether it shows bystander effect please?
A Okay. This graph here seems to have, first of all, more data points than appear to the left. So, I am not sure what is going on -- oh corrected and uncorrected, I see. Why are there three?
Q Go to 859 rather, 85 -- the Bates stamp 859 at the end.
A Okay. Yep.
MR. LEONARD: They're not even in the same range within a thousand.
Q Does that indicate to you the

existence of bystander effect based on the data that is set forth?
MR. LEONARD: Objection. What data?
Q Can you answer the question?
A I thought that he was --

Q He stated an objection, he didn't direct you not to answer.
A Okay. So restate the question please?
MR. PINCUS: Read back the question please.
(Whereupon, the question was read back by the reporter.)
A So if assuming that this is a 50 percent A sub L, N and H experiment, I see only one data point that falls below 50-percent survival and therefore this would indicate that *there does not appear to be a killing bystander effect as per this chart.*
Q Thank you.
The A sub L is synonomous with the AL-N that we have been talking about earlier. Isn't that correct?
A Well, A sub L normally as it's done here, that L is a subscript to the A.
Q But they're synonymous?
A Synonymous with what with the word, A sub L?
Q AL-N that we were talking about before?

A No. There is two different versions of A sub L, or at least two. I don't know maybe there is more than two.
Q I am going to show you Howell-23. This is a documentation that was identified by Dr. Lenarczyk associated with an experiment -- 50-percent experiment that took place on November 28th, 2000. Do you recall seeing this -- this documentation before?
A I don't recall seeing this, no.
Q If you look at the 0919597, the chart, does this show bystander?
A Nine five, which one?
Q One nine --
A First page?
Q First page, 19597.
A First page. If I look at the survival values and assuming again that this is 50-percent labeling with tritiated thymidine, which it actually doesn't even say thymidine it says, H3. Let's see if it says thymidine somewhere.
It does on the --
MR. LEONARD: I am just going to put an objection on the record to the extent that he is looking within this document for information to

0116
inform his decision making. Again this document obviously comes from two different sources. We have no way -- and Lenarczyk did not say that all these documents are all related to the same experiment.
MR. PINCUS: I don't agree with you there. But we will let the record speak for itself.
Q You may continue.
A Yes. So this particular plot, and I hadn't noticed this previously on the other ones, it may or not be the case, it doesn't say anything about on the plot that it is tritiated thymidine it says tritium. And then it does say in the parameters of the analysis spreadsheet, it does say tritiated thymidine. Okay? And I don't see any survival values that are below 50 percent, which would indicate that in this experiment, no, *there is no apparent killing bystander effect.*
Q Thank you.
And I am going to show you what we have marked for identification as Howell-24, experiment conducted on February 15, 2001 of 50 percent by Dr. Lenarczyk. Do you recognize this document?
A No, I don't. I am actually getting puzzled. There seems to be an awful lot of
0117
experiments done at the same time and I'm wondering how that is possible. Didn't -- did you hand me some others that were right around February?
Q I may have. But right now, I am focusing on these. I am not going to take the time to go back over them right now but --
A Okay. Well, I just -- you know, I am finding that puzzling and I would like to raise that point that it does seem as though there is an awful large number done in an awfully short period of time. But that be as it may.
Q Okay. Do you recognize these documents?
A This document, I don't recall looking at no.
Q Well again, Dr. Lenarczyk identified this experiment being done on that date involving 50 percent using A sub L cells.
A Yeah. These are -- these are A sub L neomycin resistant is what he is using.
Q And I call your attention to B09692, I believe, the last page of this document insofar as survivals?
A B09, which?
Q 692 please.
0118
A 692. Okay.
Q Do these survivals indicate a bystander effect?
MR. LEONARD: Shelly, I just want to

make one clarification. We are going through all these documents and we're just flipping through a graph. So long as we are clear that Dr. Howell is not looking at any of the data, how the data -- wait a minute. How the data is contrived. You might as well just take what you're asking him and you might as well just take pictures and draw it, whether something that looks like that represents a bystander effect. Is that your question?

MR. PINCUS: That is my question.

Q Whether that chart indicates to you that these results indicated the existence of a bystander effect?

MR. LEONARD: Well wouldn't it be quicker to just have him demonstrate what a chart that would show that would look like?

MR. PINCUS: Maybe if you wanted to do it that way when you question him, you are free to. Right now, I am asking him this way.

MR. LEONARD: Well here is the problem. I am not going to let him -- I want to be

0119

very clear that -- and we keep going through this, you keep showing him all these documents and he's not substantiating nor does he have any firsthand knowledge about the information in them. If you want him to look at pictures, like is this a picture of the sun? Yes, I think that looks like the sun, that is fine. But he is not rendering any opinion as to what is in these documents. So if you just want to flip to the last page and stop all the commentary about what Lenarczyk said or didn't say, we could just do that and he can say well no because as I have told you before in order to show bystander it would have to depict this. But other than that, he is not rendering any opinion or substantiating any of this information.

MR. PINCUS: Well, you're objection is noted. I want to proceed the way --

MR. LEONARD: Are we in agreement on it?

MR. PINCUS: I am not agreeing or disagreeing with you, I am questioning him. I want to proceed the way I want to proceed. Are you directing him not to answer?

MR. LEONARD: Well, I am going to direct him not to guess. If what you're asking for

0120

is an opinion on this document, he has no firsthand knowledge. Then, I am going to tell him not to guess as to what any of this means.

MR. PINCUS: We have gone through a whole series of experiments in which you did not, you know, indicate this problem until now. I have this one and a few others to go through and I want to conclude it.

THE WITNESS: That is not true. I will interrupt --
MR. PINCUS: No, you will not interrupt. There is no question pending to you, sir. So please with all due respect sit there and do not respond --
MR. LEONARD: Shelly, he's allowed --
THE WITNESS: May I respond?
MR. PINCUS: Do not respond until a question is posed to you. I am having a dialogue with your counsel, I am not looking to argue with you.
MR. LEONARD: Shelly, I think this is the problem. You see what the problem is? He thinks --
MR. PINCUS: The problem is --
MR. LEONARD: -- you're looking at

0121

pictures.
MR. PINCUS: The problem is, you told him well gee here is the basis for objecting. You're testifying for him.
THE WITNESS: No that is not true.
MR. PINCUS: I am not speaking to you, sir.
THE WITNESS: Well, I am speaking to you.
MR. PINCUS: Then please --
MR. LEONARD: *Lower your voice or I will throw you out of here.*
MR. PINCUS: Don't throw me out.
MR. LEONARD: Get out.
MR. PINCUS: No, I am not getting out.
MR. LEONARD: Get out. Deps over. Out.
MR. PINCUS: I am not getting out.
MR. LEONARD: This is my building. You will get out or I will throw you out.
MR. PINCUS: You will not --
MR. LEONARD: Dep is over. Get out.
MR. PINCUS: If this dep is over then I want to get on the phone with the judge. Let's

0122

get on the phone --
MR. LEONARD: I don't care who you call. Do it on your way down the elevator.
MR. PINCUS: Let's take a break and --
MR. LEONARD: No.
MR. PINCUS: -- let's get him on the phone.
MR. LEONARD: No.
MR. PINCUS: Why are you concluding this dep?
MR. LEONARD: Because you're yelling at my witness and it is over. I asked you to lower

your voice and you wouldn't.
MR. PINCUS: Let's go off the record and have a discussion outside. Will you please do me the courtesy?
MR. LEONARD: No.
MR. PINCUS: You're not going to do that?
MR. LEONARD: You're not going to yell at my client.
MR. PINCUS: I did not yell. I respectfully disagree with you --
MR. LEONARD: You're yelling now.

MR. PINCUS: No, I am not. I am not yelling. My voice tone is much lower than yours.
MR. LEONARD: You're accusing me of telling him -- you're letting him -- the reality is, he's looking at pictures and what you don't like is, you want him to act as if he is giving you an opinion on these documents and that is not what is happening.
MR. PINCUS: John, Number one are you done?
MR. LEONARD: I am and so are you.
MR. PINCUS: No, no, no. I want this on the record here. Now hear me out and I am surprised that you're taking this position here right now because the fact that we have our first disagreement on the record, you're terminating a deposition? I politely asked your client not to interrupt a dialogue that you and I were having. You, yourself, interjected when he attempted to do that requesting him not to do so. You and I continued to talk about it, he went in, I politely asked him to not do that.
MR. LEONARD: Shelly, you raised your voice. I asked you not to --
MR. PINCUS: You raised your voice to

me too. You have too. So all right if we raised our voices, or whether we didn't raise our voices, there is no basis for you given the time lines here. Are you declaring Discovery over?
MR. LEONARD: I don't even know what you're talking about.
MR. PINCUS: No. If you're terminating this deposition then you expect other depositions to go on before we conclude this one? Because there is not a good reason for you to terminate this deposition based on what occurred. And if you are going to do that before we break, I want to reach out -- I want us to reach out to Magistrate Falk so that we can have a discussion concerning that. That is what the order requires us to do when we have those discussions.
MR. LEONARD: I don't --
MR. PINCUS: Let's go outside please.

Can we please go off the record and go outside?
MR. LEONARD: Off the record. I'll be right back.
(Whereupon, a recess was taken.)

BY MR. PINCUS:
Q So looking at Howell-24 are you

0125

familiar with this experiment that Mr. Lenarczyk performed?
A I don't recall this --
Q You don't recall this at all?
A Not the specific experiment. I'd have to go back and look at the complete records. Lenarczyk did experiments this happens to be -- this is the A sub L one?
Q Yeah.
A I don't recall this, no.
Q Do these documents indicate anything to you by way of whether Dr. Lenarczyk's results showed a bystander effect?
A Well actually, I am just -- you know, we just had a large discussion about the detail to which one should look through these documents. So as I just started getting prepared to answer your question, I just noticed that the Coulter count here says, the cell counts for samples -- the cells were not syringed. Were these used in the analysis, these cell counts that weren't syringed?
Q I don't know.
A Then I can't comment.
Q Then that is your response. Thank you.

0126

A You can't do an experiment without syringing the cells.
(Exhibit Howell-25, Recount of 4/17/01 tubes, is received and marked for identification by the reporter)
(Exhibit Howell-26, Experiment dated 4/19/01, is received and marked for identification by the reporter)
(Exhibit Howell-27, Experiment dated 5/3/01, is received and marked for identification by the reporter)
(Exhibit Howell-28, Experiment dated 6/28/01, is received and marked for identification by the reporter)

BY MR. PINCUS:
Q I show you what has been marked for identification as Exhibit Howell-25. Do you recognize this document?
A It has my writing on it.
Q Do you recall performing this experiment?
A No, I don't specifically recall

performing this experiment.
Q Am I correct that this was a
0127
50-percent experiment?
A It indeed says 50-percent labeling.
Q And looking at the survivals can you indicate whether your experiment showed a bystander effect?
A Where are the survivals?
Q I am saying can you glean that from this experiment? If you look at -- if you look at 7365, the Coulter counts, are you able to determine?
A The what?
Q The colony counts, I'm sorry. Are you able to determine whether it showed a bystander effect?
A Not by looking at that. I mean, I can try to figure it out by looking through the entire thing but I can't tell by looking at that.
Q Would you look through this experiment, which you say you believe you performed and whether you can determine that, and describe for me as you do so the process that you're following in order to do so?
A Based on this, I can't tell immediately. It looks as though this is a 50-percent labeling sort experiment wherein the labeled cells were labeled with C F D A, which would
0128
enable you to identify them in the cell sorter and the unlabeled cells would be not so labeled. So, the cell sorter presumably was used to separate the two labeled and unlabeled cells and the colonies -- the colony counts presumably would be for the labeled versus unlabeled cells.
Q That would be representative of the plus or minus set forth?
A I would assume, yes. I don't think -- no. That is not my writing so yes, I am assuming that minus means no dye, plus means dye. But I don't know.
Q Do you recognize whose writing that is?
A It may be Marck's but I am not sure.
Q Might it be Dr. Bishayee's?
A It might be Dr. Bishayee's. It could be.
Q Could it be Dr. Azzam's?
A No it couldn't be Dr. Azzam's.
Q So continue please.
A Okay. So as I said based on looking at this, I am not sure that I can tell if there is or isn't. Let's see.
Q Is there anything in the facts that
0129
would assist you?
A Well what is 1.2 here? 1.2. Okay.

So if you look at Tubes 1 and 2 --
Q What page are you on, sir?
A 7362.
Q Okay.
A Tubes 1 and 2 are those -- yeah. Those two are control. Okay? So Tubes 1 and 2 are control, no tritiated thymidine. And the colonies we can see in the 1.2 and 2.2 minus, we have --
Q Now, you're looking at 7365 again?
A 7365.
Q No. Yes. Okay.
A 1.2, the colony counts are 57, 56 and 55. 2.2, they're 85, 86 and 97. And typically, one would average the values for 1.2 and 2.2, at least that is what I imagine was done. And these are the bystander cells, right? Because they're noted as dye negative according to this, whoever wrote that. And if I took the average of 1.2 and 2.2 then it is indeed likely that some of the values that we see below would look to be lower than that average. So, one could construe that there is some bystander effect in -- in the 3.2, the 4.2, probably not the 5.2, maybe the 6.2 and probably the 7.2. I am

0130

trying to average them in my head quickly, I can't do it.
Q I understand.
A So there seems to be lower counts in the bystander -- the bystander cells, which would be 3.2, 4.2, 5.2, 6.2 relative to controls 1.2.
Q Now why was Dr. Azzam participating or observing this experiment?
A I wanted -- I don't remember in this particular one. But the reason I was having Dr. Azzam was as a witness that these experiments were being done.
Q A witness for whom?
A For me.
Q Who told you to do them?
A Nobody told me to do them that I recall.
Q You don't recall being instructed to perform this experiment by Dr. Raveche or any other administrator at the University?
A I do not recall being instructed as to do so.
Q And is it your recollection that -- well what is it your recollection of what Dr. Azzam did in regards to this experiment?

0131

A He -- I was at the hood in 451B, which is toward the back of that room. The window is to my right along with a desk. I don't remember if the desk was there at the time and he sat by that what I think is where the desk was.
Q That is all he did?
A Yes.

Q Did you confer with him in any fashion in regards to this experiment?
A In terms of setting it up and so on?
Q Setting it up or carrying it out?
A Other than to ask him to sit? No.
Q Is it your recollection that he sat and observed each and every step associated with this?
A I can't recall whether he saw every step or not.
Q Do you recall whether he sat and observed any other experiments or just this one?
A I believe there was more than one but I can't recall. It would be indicated by initials.
Q Is it your recollection that Dr. Azzam initialed the documents associated with any experiment that he observed at your request?
A That is what you see right here.

0132

Q Well, I see it insofar as this particular exhibit, Howell-25.
A Correct.
Q But so I am clear are you telling me that to the extent he observed other experiments that you performed, he would have engaged in that initialing process?
A I believe so, yes.
Q That is your recollection?
A Yeah that is my recollection.
Q Fair enough.
Now, I am going to show you Howell-26 please.
A Okay.
Q Do you recall whether you performed this experiment on or about April 19, 2001?
A Again, I don't recall which ones were done and weren't done so, I don't recall.
Q Does this contain your handwriting?
A Yes.
Q Does it assist you at all? If you look at the document Bates stamped B007390 it has your name. See where I am referring to, sir, up here?
A 73 --

0133

Q 90?
A Okay. Yeah.
Q Does that assist you in terms of identifying whether you performed this experiment or not?
A That would indicate -- that would indicate that I entered data into the spreadsheet, or that would suggest that I entered data in the spreadsheet to analyze the variety of data that we have here.
Q The significance of identifying you as the investigator means what?

A Means that I would have carried out the experiment. That is normally what I would -- normally how I would indicate that.
Q So if the name Lenarczyk or Bishayee appeared there it would be reasonable to conclude that those individuals carried out the experiment?
A Assuming that when they filled out the spreadsheet -- because we use the same spreadsheet over and over. Assuming that they had typed in -- you know erased what was there and typed in their name that is the case.
Q And this was another 50-percent experiment was it not?

0134

A This is 50 percent.
Q Now insofar as survivals if you look at, I believe, 7394?
A Yes.
Q What did this show insofar as the bystander effect if anything?
A Okay. So this does not appear to be a sort. And there was some problem in this experiment indicated on 7384, had difficulty with transfers due to inconsistent decanting left over --
Q What does that refer to?
A When you're washing -- let's see. It had something to do with -- what you do is, you transfer the cells from -- I believe this is what is going on there, from the Helenas to a bigger tube when you are breaking them up -- no that is not true because its 72 hour hasn't occurred yet so this is prior to loading the tubes. So that means that this is in the assembly of the clusters. There was some problem and would have probably led to inconsistent numbers of cells in the cluster. If you miss some of it, or have difficulty in the transfer, you wouldn't have a cluster necessary at 4 million cells.
Q So, you noted that. And getting back

0135

to 7394 what did that mean insofar as the survival and bystander effect that is denoted on the chart?
A 7394. Well clearly something occurred in this experiment such that neither labeled nor unlabeled cells appeared to be affected. So, one can't conclude anything from it other than none of the cells seemed to be significantly affected.
Q Is it fair to say that you were trying to replicate the results reported in the articles that we referred to earlier through conducting this experiment?
A We were trying to do a 50-percent labeling experiment with tritiated thymidine.
Q Would you agree that the results that are shown here are not consistent with what was shown in the figures that I showed you in the two

articles?
MR. LEONARD: Objection to form. You can answer.
A *Yeah, I would say they're not consistent with anything that I would expect because there is no response, which I have no idea why there is no response.*
Q *When you say no response that means no bystander?*
A *No killing of either the labeled or unlabeled it appears.*
Q Okay.
I am going to show you what we marked as Howell-27. Do you recognize this document?
A Again, I don't recall this particular document but my writing is on it.
Q This indicates a 50-percent experiment, or appears to indicate a 50-percent experiment, that took place, or commenced taking place, on May 3rd, 2001. Is that correct?
A According to the document, yes.
Q And to your recollection did Dr. Azzam observe, or have anything to do with this experiment?
A I have to see only -- if his initials are on it, I guess the answer would be yes. Otherwise, I don't know.
Q Well, I don't believe that his initials are anywhere on this document.
A So, he may or may not have been part of it. I believe that I had him initialing but I can't be certain.
Q If you look at the survivals on 7407 please what did this tell you insofar as a bystander effect if anything?
A Which one?
Q 7407 please?
A Okay. So, we are 50 percent -- so the majority of the points -- in fact all of the corrected survival points indicates survivals above 50 percent, which would indicate that there was no killing bystander effect in that particular study.
Q And I will show you the last, Howell-28. If you would please do you recognize this document?
A Again, I don't recall the document specifically but it is my handwriting and there is somebody else's handwriting on it too, which --
Q Where are you looking please?
A 7423.
Q Do you recognize whose handwriting that is?
A Not sure. It is probably Marck's. I am not sure.

Q Did Marck tend to use European seven's in his writing? Do you know what I am referring to?
A Yeah. But I would have no idea.

Q What about Dr. Bishayee do you recall whether he did so?
A I don't recall.
Q But in any event let's look at the survivals again here if you would please, as we have been doing. If you go to 73 -- I'm sorry, 7430.
A 7430.
Q What does this tell you in regards to bystander if anything?
A Okay. So if this represents a 50-percent experiment, which it says it is on Page 7419, only one of the data points has a survival value below point -- no, two. Excuse me, two of the data points have a survival value below .5. And those two data points would indicate perhaps some bystander. The other ones are above .5.
Q And that --
A Indicating that there doesn't appear to be a bystander -- survival bystander or killing bystander.
Q Do you have any recollection in regards to these last few exhibits that I have just shown you having any discussion about them with Dr. Raveche?
A With Dr. Raveche? Which docs now?

So, we are looking at what?
Q These past four experiments that I just showed you, which you identified as having your names on them?
A Those docs, I did not discuss with Dr. Raveche.
Q Did you discuss those documents with Dr. Baker to your recollection?
A No.
Q To Dr. Putterman?
A Not the documents, no.
Q To your program director at National Institute of Health?
A No.
Q Who was that individual?
A Program director? Gentleman -- what was his name? Paul something. I forget. He is not -- oh what was his name? I don't recall. I don't recall. In fact, I am not sure I ever spoke with him during the entire course of the grant. I don't typically give my program directors calls.
Struedler (phonetic), Paul Struedler. It might have been Mahoney. There is Paul Struedler and Francis Mahoney but I can't remember what they're two functions are.

Q Okay.
(Exhibit Howell-29, Summary of Experiments, is received and marked for identification by the reporter)

BY MR. PINCUS:
Q Dr. Howell, I'm going to show you what I've marked as Exhibit Howell-29. Do you recognize that document?
A Yes.
Q Did you author this?
A Yes.
Q Do you recall when you did so?
A When the attorneys -- after the District Attorney's office visited my office. I think -- was he the district attorney? Who the heck were those guys again?
MR. LEONARD: The Attorney General's office -- the U S Attorney's office?
THE WITNESS: Yeah. Whatever they were.
A They came to the office. Subsequently, University attorneys got involved and they asked me to provide a summary of the -- of some experiments.

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Q Can you --
MR. LEONARD: Shell can we take a minute?
Are you saying you drafted this at the request of the in-house lawyers?
THE WITNESS: Yes.
MR. PINCUS: It was disclosed to the U S attorneys. It's been out here.
MR. LEONARD: I know. But it would be inadvertent production in terms of you guys.
MR. PINCUS: Well unfortunately there has been quite a bit of discussion about this and the other day when you weren't there in another context so...
MR. LEONARD: I am going to direct him not to answer any questions. I know it was provided to U S attorneys it was done at the behest of in-house counsel so, I'm going to say inadvertent production with respect to the civil litigation.
MR. PINCUS: I have to ask him some other questions surrounding this. Okay? If I may? Okay? Let me ask a question. If you have a problem, you let me know without getting into the substance of the document, just procedure.
THE WITNESS: Now before you do that

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can I have a word with you outside? I just want to ask you a question. It's not about this document about something else. Can I take -- I would like to take a break and ask a question or not?
MR. PINCUS: Let me just ask you a

couple of questions and then I will let you do that. Okay?

THE WITNESS: Sure.

Q Did you discuss the preparation of this document with Dr. Azzam?

A Did I -- the preparation of the document? No.

Q Did you discuss with Dr. Azzam the material that forms -- did you discuss with Dr. Azzam the information that is contained within the document?

A Some of the information.

THE WITNESS: I can answer these?

MR. LEONARD: You can answer the question.

A So some of the information in the document certainly was discussed with Dr. Azzam. But -- well prior to the preparation of the document.

Q Okay. Am I correct that the

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information that you discussed with Dr. Azzam involved some of the variables that may have affected the inability, or replicate, the bystander effect in these experiments?

A Yes.

Q Okay. And the variables that may have changed do you recall whether that information was provided to you by Dr. Azzam?

A No that was not. You mean in written form?

Q No, no, no just in substance again. Did he orally say, you know, and discuss with you --

A We had discussions from which brain it emerged from. I couldn't tell you on a case-by-case basis.

Q And did you discuss with Dr. Azzam issues regarding the culture medium?

A I discussed the culture medium issues perhaps with Dr. Azzam. But obviously there were issues also related to the cells, which involved Lenarczyk. So who I discussed what with, I don't recall.

MR. LEONARD: Shell let me just say, I have no problem in the world with you asking him these type of questions but I prefer it not come

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from a line-by-line reading of the document. So anything you want to ask him that is fine but in my view, you shouldn't have that document.

MR. PINCUS: Well, I am not so sure I should or I shouldn't. And the fact of the matter is, I do. And at this point in the game so to speak it having been out there for as long as it has been, I am not so sure whether in fact there is a waiver to the extent that it is protected as you may suggest.

So are you telling me that I can't show -- you're not going to permit any questions associated with the document?

MR. LEONARD: I think that there is a lot of material in the document and you are hitting upon it that certainly, you know, questions with Dr. Azzam before the preparation. What I don't want is for you to sit with the document, look at it and ask questions based on its contents obviously. But, you know, because that constitutes work product. If he is being told to compile this information and this format by the in-house lawyers that is work product.

Q Are you sure that you did not do this at the request of Dr. Raveche?

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A No not at the request of Dr. Raveche.

Q You did not share this document with Dr. Raveche?

A No.

Q Dr. Putterman?

A With Putterman? I don't know if she saw it or not.

Q Did you share it with Dr. Baker?

A No, I did not.

Q Did you discuss this document with any of those individuals?

A This document? No.

MR. PINCUS: Why don't you have your discussion. I want to take a five-minute break.

(Whereupon, a recess was taken.)

MR. LEONARD: I'd like to put on the record that I have looked at what has been marked as Plaintiff's Exhibit 29 and I'm going to allow the witness to answer questions regarding that document.

Q So, Dr. Howell this document isn't dated but can you be any firmer insofar as a date or time when it was that you caused this document to be prepared?

A When I was asked for this, they

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wanted it within 48 hours or something because I can remember sitting up in bed at midnight typing this up to get it done within the required time frame. So it must have been very soon after the whole thing with the other attorneys started, I mean. So, I don't know the date.

Q Can you identify a year?

A Two...

THE WITNESS: When was your first -- I think 2004 --

Q She can't respond.

A Maybe 2004, 2005, somewhere in there.

Q Somewhere in there. Okay. Fair enough.

And did anybody else have input into

the preparation of this document other than yourself?
A In preparation of the document? As I said this was done at midnight in my bed and my wife was in the bed and awake so, she would have been there while I was typing. But beyond that, no.
Q When did you start working with V79 cells?
A 1984 maybe.
Q And where did you get the cells from?

A In '84, I used cells from -- I was working in Ahmen (phonetic) Kassis's lab in Boston.
Q K-A-S-S-I-S?
A K-A-S-S-I-S.
Q And was it that cell line that you kept going for purposes of doing research?
A No not at that time. Not at that time.
Q What is the history of the cells that you used in regards to V79?
A Sure. So in the time at the Harvard Med School, I used his cells. What the history of those were, I have no absolutely no idea. When I came to New Jersey Medical School, I got V79 cells from Dr. Athwal, A-T-H-W-A-L.
Q Who was he?
A He was a faculty member at the school. I have no idea where he is now but he left so, we used those until I don't know when --
Q And by the way when did you come to --
A '87.
Q '87?
A Somewhere along the line. Number of years later, I ended up getting additional cells

from Ahmen Kassis. The relationship to the original ones, I don't know. Somewhere later on down the line, his freezer melted down and he lost his cells and then my freezer and, I don't know, some order like that. So *a number of different cells have been involved in this.*
Q How did you maintain your cells?
A I had cells in -- kept in the flasks so those were carried constantly.
Q What do you mean carried?
A Passaged from one flask to the next is how we would typically maintain them. And in the 1980's when I was doing that work as a graduate student, I don't even recall, I usually -- I think I just asked somebody in the lab for a flask of cells

as I recall because I was doing those experiments every two months, or something like that.
Q I'm sorry were you done?
A Go ahead.

Q Have you ever heard V79 cells referred to as being immortal?
A Yes.
Q What does that mean to you?
A That means that you can -- they won't senesce and that you can keep propagating them over

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and over and over again.
Q What medium did you use to maintain these cells?
A Minimum essential medium.
Q Also known as M E M?
A Yes.
Q Am I correct that there is two parts to the medium there is a culture medium and a serum?
A There is more than that.
Q What else?
A There is water. Because we used to make our own medium so, we would purchase a powder from Gibco, I believe it was.
Q Gibco, G-I-B-C-O?
A G-I-B-C-O.
So, we purchased the M E M powder from Gibco and mix up water from the University's deionized water system. Then, we would add 30 milliliters of Gibco seven and a half percent sodium bicarb and raised the volume to one liter.
Q Sodium bicarb affects P H. Correct?
A Sodium bicarb is -- the color is -- yes. It is -- essentially yes. *It is essentially a buffer for the media, I guess.*
Q During the course of your experiments

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associated with the bystander effect did you experience any problems with the culture medium?
A We haven't finished the ingredients.
Q So, you're still using the same?
A No. There is more ingredients that we haven't gotten through. You asked me what I put in --
Q Oh, I'm sorry.
A And so, I hadn't completed that.
So, we also put in L-Glutamine and L-Glutamine is put in from a concentrate from Gibco, 10 M L's per liter. I don't remember what the concentration of the stock is. We also put a concentrate of penicillin streptomycin, which is also was typically from Gibco, I think always from Gibco. And that was 10 M L's. I don't remember the concentration offhand.
Q Did you experience any problems with the culture medium during the time that the experiments associated with the bystander effect were performed?
A What do you mean by problems?
Q Well did the culture medium show any type of evidence of change whatsoever?

MR. LEONARD: Objection to form. You can answer if you can.
A You know the only -- the only change that might be noticed would be a very large change in color. If you add moderate changes in color, you wouldn't notice. One thing that does definitely occur is when you make the media. Initially it is not as pink as when the bottle is emptying so as you keep using the bottle and open it again and again and again. It gets a pinker look to it it's sort of an orangy --
Q Orangy?
A -- look initially and gets pinker as you keep opening the bottle.
Q And do you have any recollection of taking notice, of having any concerns, about this during the time that the various experiments that we have been discussing here today were occurring?
A No. And I wouldn't have recognized small changes in color, I wouldn't have noticed.
Q So if we look at Howell-29, I believe it is that you have in front of you, and if you go to Page 2, which is 18320, and you refer to P H of media that is what we are talking about here right now. Is that correct?
A Yes.

Q And that is denoted under a subject heading invariables that may have changed?
A That is correct.
Q And you had listed that for purposes of trying to address why the 50-percent labeling data were not reproducible notwithstanding what had been published. Correct?
MR. LEONARD: Objection to form. You can answer.
A I indicated that as one of the variables that may have changed.
Q May have changed.
A And I also indicated below that -- that I had spoken with another colleague who indicated that P H changes of .1 unit could completely change a response. And .1 unit P H, I doubt, although I do not know for sure, would give you a significant change in the color of the media.
Q Did you undertake any analysis or investigation to determine whether in fact there had been such changes in the P H of the media?
A None that I recall. At the time we were doing those experiments, we did not P H the media. When it was prepared, we added the ingredients as they were and that was the way I was

taught as a graduate student.
Q So notwithstanding that you list this as a possibility, you don't have any facts to

support the fact that there was a change in the P H of the media that may have influenced the results of the experiment is that so?
MR. LEONARD: Objection to form.
A I have no measurement of the P H. It is likely that there would be variations at least of .1 unit P H from batch to batch but --
Q But you have no --
A I haven't measured it.
Q Let me finish the question in fairness to you. You undertook no measurements for purpose of determining that likelihood that you have described?
A No.
Q You say insofar as other variables that may have changed. If you go up, you see it says source of microfuge tubes that the clusters are maintained in. Only ultrapure tubes are free of trace elements and we have never used ultrapure tubes.
What were you referring to there?
A We -- the original tubes were from

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Helena at some point, which I don't recall. We ran out of them and they no longer made the tubes any longer. So in fact, I know I have one batch of tubes still in the laboratory that were ordered as replacements for the Helenas that we had run out of. So, we sought an alternate source and we elected not even to use those because they were sufficiently different in terms of -- I don't remember exactly why we had decided those weren't good, I forget. Pellets didn't come out easily or what. So, we were not able to get the same type of tubes as the original Helenas. Now when that break took place, I don't know.
Q So there was a change in tube manufacturers over the time the experiments were done?
A Correct. And under all cases, we never ordered tubes that were ultrapure, you know, free of anything. I think Dr. Hill would be familiar for R N A's type experiments and so on you would need ultrapure tubes.
Q Do you have any evidence that the tubes themselves would have affected the kinetics of the survival of the experiments?
A The kinetics of the survival? Do I

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have evidence -- what do you mean by kinetics of survival?
Q The kinetics of survival would be at the rate of survival.
A I don't know what that means.
Q Did you test other tubes of the same dimensions?
A Of the same --

MR. LEONARD: Objection.
Q As the Helena tubes that you described?
A Meaning did I conduct a study specifically to test different tubes?
Q Yes.
A Not that I have any recollection of, no.
Q And you said you're not using the Helena tubes anymore. Is that true?
A I am using 400-microliter microfuge tubes, the manufacturer of which I don't know.
Q Have you had any problems with them?
MR. LEONARD: Objection to form. You can answer.
A Problems in what sense?
Q Have they posed any difficulties

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insofar as the reliability of the data that you have obtained in the course of experimentation?
A I don't know. I mean, I don't know. I couldn't tell you. I haven't tested whether or not it has given me problems.
Q When did you stop using the microfuge tubes exactly? I think you mentioned it --
A The Helenas?
Q Yeah.
A No, I said I didn't remember when -- when specifically in time we ran out of them. I have no idea.
Q Did you ever repeat the experiments that Dr. Bishayee performed using microfuge tubes?
MR. LEONARD: Objection to form.
A Did I ever repeat the experiments using microfuge tubes?
Q Yeah.
A I did experiments with microfuge tubes.
Q I am talking about the ones that Dr. Bishayee performed.
A Which ones?
Q The ones that we reviewed earlier here today.

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A Which dates?
Q You want me to go back, I will go back?
A Are you talking about the '99 experiments, the 2000? Which experiments are you talking about?
Q I'm talking about any of the hundred or 50-percent experiments that we identified here earlier today?
A And repeat the question?
Q Did you ever repeat any of those experiments using microfuge tubes?
A Using microfuge? I carried out

experiments with 50-percent labeled and so on with microfuge tubes, yes.
Q And what did that show insofar as compared to Dr. Bishayee's results?
MR. LEONARD: Objection to form.
A As summarized in this document.
THE WITNESS: So, I can answer?
MR. LEONARD: Yes.
A As summarized in this document the bystander responses that we had seen in the published studies appeared to be not seen in the subsequent experiments that we carried out.

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Q The microfuge tubes do they, to your knowledge, have more air space over the medium that is contained within that tube then the Helena tubes?
A Oh, we are getting -- you're calling microfuge tubes different than Helena tubes?
Q Yeah.
A Oh then, we have to rewind --
Q Are they synonomous?
A We have to rewind all of this because I assumed when you said microfuge tube that you meant Helena tube.
Q Okay.
A So, we got to go all the way back to the beginning. So let's start over again.
Q Okay. Microfuge tubes to you mean Helena tubes is what you're telling me?
A That is typically what I, you know, we -- I would call that a microfuge tube, 400-microliter microfuge tube.
Q And when you identified earlier the fact that you changed manufacturers of the Helena tubes, you were using microfuge for purposes of describing that if I understand you correctly, right?
A Yes. The Helena is the manufacturer,

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the tube is a microfuge tube.
Q Gotcha. Okay.
And when I asked you whether you are still using Helena tubes, I take it then that your response was well, I am not using tubes from that manufacturer but I am using microfuge tubes?
A Correct. So, I can say I am not using Helena tubes, I am using microfuge tubes.
Q And have you, insofar as a change in manufacturers, have you undertaken, you know, any kind of investigation, or study, to determine whether the different manufacturer of these microfuge tubes in fact caused, you know, an inability to replicate the published data?
MR. LEONARD: Objection to form.
A Yeah. I don't recall clearly but I do know...
THE WITNESS: I can --

MR. LEONARD: Yes.
A As I told you, we have a box of these tubes on top, which I still have, which for some reason, we rejected as not being suitable for the experiments and I don't recall why. I mean that was a long time back.
Q So sitting here is it fair for me to

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conclude that this box that you're making reference to did you undertake any kind of experimentation to determine their suitability?
MR. LEONARD: Objection to form. You can answer.
A Not specifically to determine their suitability. They were -- we rejected them for some reason, which I don't recall as not suitable, which I presume must have been based on an observation. Because we certainly wouldn't have bought them and then just stuck them up there as no good.
Q Well did you do any experimentation to determine as to whether that type of tube in fact was a variable that may have changed your inability to reproduce the published data?
A Well there was no experiment done to show that that was the case. What I am telling you is that the fact that we had rejected some indicated that the tube has an impact. But I don't remember why we rejected it.
Q Okay.
And are there any documents that you have that would assist you to respond what the reason was?
A I don't know. You have got all the

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documents that I have so, I mean, you got everything from 1990 what, '96 to what? You got virtually everything in my lab from '96 to God knows when. So it would have occurred in that time frame.
Q I am asking whether you can recall whether there is any document that would assist us --
A Not that I can...
Q Okay. So, you're not aware of any document that would assist us to determine whether in fact this, you know, was a contributing factor?
A No. The only thing I can tell you is, I have a box of tubes, which you're happy to take off my hands.
Q Go down to the next variable. You say levels of trace element in the U M D N J deionized water from which cell culture media is prepared.
To your recollection at or about the time these various experiments were performed were any other individuals who worked within that lab, whether it be Dr. Lenarczyk, whether it be Dr. Azzam, complaining of any trouble that they had that

would indicate that the water was affecting their experimentation?

A I don't think either of them used the water.

Q Was there anyone else who used that type of water that you can recall other than yourself or Dr. Bishayee?

A In my lab? Not that I can recall. Dr. Lenarczyk and Dr. Hill, I believe, used bottled media if I remember correctly. I don't think they made it but I don't remember clearly. Azzam definitely. I don't believe Azzam used the water directly from the tap. I know at least now, he puts it through a millicube system. Back then, I don't know if he did or didn't.

Q So while you identified this as a variable that might possibly have changed the results do you have any facts or evidence to support a conclusion that in fact it did change the results?

A I have -- I have observations of installations and whatnot of piping in the laboratories; for example it was Dr. Avive (phonetic) who volunteered to run those pipes into our lab to provide us with the deionized water. I don't remember what year that was, it was certainly prior to this. And if you watch the maintenance personnel when they handle the pipe to install these lines there is absolutely no clean conditions whatsoever, you know. You have got cement and all kinds of garbage flying around and they put the pipes together and that is it.

Q Why did you let it continue?

A It didn't occur to me at the time that it was an issue.

Q After you wrote this have you undertaken to change the piping?

A We have -- no, I have not undertaken to change the piping.

Q That answers the question.

So other than your observations of the time in which this piping was installed is there anything else that factually, you believe, supports a conclusion that this particular variable, the level of trace elements, contributed to the inability to replicate the data?

MR. LEONARD: Objection to form. Go ahead.

A Well, I mean, I can guarantee you that filters were changed at some points in time over and over again. They may have changed the manufacturer of the filters so, I think essentially are you -- you are asking me did the concentration of ions change of -- all the different ions change in the deionized water? Deionized doesn't mean

100 percent free of ions there are ions there, it doesn't mean a hundred percent free. And there is all different degrees of being deionized depending on how much money you want to spend and depending on how often you change the filters and how often -- how you handle your holding tanks. There is an infinite number of variables, your distribution lines. So, one cannot, with any degree of certainty at all, state that the water would be identical. In fact, I'd go almost as far to say that you can almost guaranty that it wouldn't be exactly the same.

Q Where did you get your filters from?

A I don't get the filters, the University does. It is essentially done.

Q Do you know where they come from?

A I have no idea.

Q Did you try filter from any other manufacturers to determine what effect different types of filters would have on survival?

A No.

Q So, you did not -- you say you can guarantee that it would contribute. You have not

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done any type of experimentation to confirm your guaranty, or your -- or what you believe to be the case. Is that so?

MR. LEONARD: Objection to form it mischaracterizes his testimony. He said, the content of the water he didn't guaranty would change not the filter.

MR. PINCUS: I will rephrase the question. Thank you.

Q So did you do any investigation of the filters?

A No.

Q Can you cite any reference --

A I'd like to make one other point as well. It's even possible, and I have no idea, that the entire filtration system was changed at some point in time. So that you might want to look into also.

Q Well, you don't know for a fact that that occurred?

A I don't know if it did, no.

Q Can you cite any references that indicate filters used to sterilize media would have an effect on radiation survival?

A Filters that are used to filter

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media -- to sterilize the media have usually wetting agents on them. So there are substances, chemical substances, on those filters, which, I would imagine, differ from manufacturer to manufacturer, and even within the manufacturer depending on what kind of filter you buy.

Q Did you contact any manufacturer to

discuss this issue with them?
A Not regarding the wetting agents per se. But we used filters from many different manufacturers. Some of those filters were donated by Roche, Novartis. We used whatever filters we could get our hands on.
Q But did you ever discuss this wetting agent issue with any of the various manufacturers or pharmaceutical companies?
A No.
Q Did you ever observe any affect on plating efficiency in regards to these experiments and the use of the different wetting agents?
A I didn't look to see if there was or wasn't.
Q So, you have no data to support whether it did or it did not have an affect. Is that the case?

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A I do not record what filter was used, what manufacturer it was, or anything of the kind. So, one would have no way of correlating the two.
Q So, you would have no data to make the connection. Correct?
A Correct.
Q This issue regarding wetting agents is it significant -- so significant in your mind that it might change, you know, the survivals of these cells from expediential to biphasic?
A Well to the extent that -- you know, one example Dr. Hill has cited is that a nanomole, or of certain substances, could perhaps make a change. So if there is a wetting agent on the filter it is pretty likely that it might be there in nanomole or quantity. So yes perhaps.
Q But you don't have any data to support that in fact occurred. Isn't that so?
A I did not do experiments to determine if wetting -- wetting agents affect survival.
Q Let's go down to the next one if you would please. Methods used --
A Actually excuse me. I don't -- I didn't do any experiments to affect survival for bystander response.

0168

Q Fair enough.
Let's go down to the next bulleted item methods used to clean bottles used to prepare and store media.
A Yes.
Q Was the method of cleaning the bottles changed during the time Dr. Bishayee was in your lab and after he left?
A The soap may have changed.
Q Do you know that to be a fact?
A Probably yes. But I don't know when the change would have been because we used, for a

long time, Fisher powdered soap. And then at some point in time switched to Sigma concentrated liquid soap. And I don't know when that change would have been.
Q To your knowledge did Dr. Bishayee and Dr. Lenarczyk use the same bottles?
A Probably not. Back -- oh, you mean -- which experiments? For the A sub L's or which?
Q For the V79's, A sub L's, which?
A I don't know if there was mixing of the bottles between the lab. The A sub L experiments were done in Dr -- where Dr. Hill and
0169
Dr. Lenarczyk were. I don't know if they kept their bottles separate from the bottles that were being used in the lab down the hall.
Q And then same question in regards to the V79 experiments. Do you know whether Dr. Lenarczyk and Dr. Bishayee used the same bottles?
A I would imagine. Although, I don't know that those bottles all came from the 451 lab. But I don't know.
Q Do you know whether the washing method was changed other than you mentioned, soap?
A Washing method, the soap could change. And then the degree to which the steps that people do.
Q But do you know for a fact that the method was changed by the individuals?
A I don't know for a fact. I do know that it would be unlikely they did it exactly the same as the other person.
Q Do you know how the bottles were rinsed by the two?
A Typically what I would instruct people to do was ten rinses with -- we start with regular water rinses followed by deionized water
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rinses. And I don't actually remember now, I think it is ten total between the two.
Q Do you know who did the washing?
A Typically whoever was doing the experiment was in charge of their own bottles.
Q Isn't it a fact that this issue relating to washing might have an affect on plating efficiency but not survival?
A Is that a fact? I have no idea.
Q I am asking you whether you know or not?
A I don't know.
Q You don't know?
A All I know is that if there is a chemical in the bottle that one doesn't anticipate to be there it could indeed affect how the cells

respond.
Q And do you have any data on which one can reasonably conclude that a change from an expediential survival to biphasic survival occurred because of the methods to clean bottles?
MR. LEONARD: Objection to form.
A I did no experiments to carry out to see if choosing a different bottle made a difference.

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Q Let's go to the next bulleted item if you would please. Sodium bicarbonate used -- used to be prepared from powder as opposed to the liquid form obtained from the manufacturer.
A Okay.
Q Did you change suppliers, or did you use the same supplier when you bought the powder or the liquid?
MR. LEONARD: Just to clarify when you say you with all these different things, you mean the University, Shelly?
MR. PINCUS: Well --
MR. LEONARD: He is not ordering supplies.
MR. PINCUS: Well, I am talking about his lab. If he knows?
A I don't know if it was a change with sodium bicarb -- change of manufacturer, I don't know.
Q So, you never checked?
A Not that I can recall.
Q So if you didn't check with the University did you ever contact the supplier to determine what difference would be made using one or the other, whether it was powder or liquid?

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A No, I didn't. But again, the liquid -- if I make it it is made with the University water. If I buy it from the manufacturer premade that is made with their in-house water.
Q Did you notice any difference in the color of the median in the incubator, which would indicate a difference in P H from this?
MR. LEONARD: Objection to form.
A At what point in time?
Q During any of these experiments.
A The color of the medium changes during an experiment.
Q Did you test this point in any fashion?
MR. LEONARD: Objection to form.
Q Did you test this bulleted item that is set forth in Howell-29 about sodium bicarb and liquid?
MR. LEONARD: Objection.
A Where on that bullet does it say --
Q Where it says sodium bicarb and

liquid versus powder?
A Did I check whether powder versus liquid has an affect?
Q Yes.

0173

A No, I didn't check. But again, I will repeat that powder means that I used in-house water.
Q I understand what you're saying.
The next section that talks about variables that we know have changed.
A Yes.
Q Let's deal first with the different incubator.
A Yes.
Q You say rusting as a Queue incubator was replaced with a Napco incubator obtained by donation from private industry. In fact, you had several incubators in the lab. Isn't that so?
A Uh-huh.
Q Yes?
A Yes.
Q That is where I remind you, you have to give a verbal.
A Sure.
Q Did you determine whether there was any difference in the survival of the hundred percent experiments when you used different incubators?
A I never did experiments specifically

0174

to test whether the incubator makes a difference.
Q And was there any difference in the bystander experiments from the expediential decline to plateau above 50 percent based upon the different incubators?
A That I don't know. What I can tell you is that at the time we were doing the experiments, we did not -- I don't believe there was routine sterilization of the inside components of the incubator. There may have been some sterilization but certainly nothing that was a routine. So it is possible that things are in the incubator that one is not aware of both in the water that provides the humidity as well as on the incubator surfaces.
Q So other than that observation that you made, you have no firm data on which -- on which one could reasonably conclude that the incubator had an affect on survival?
A What I can tell you is that I know that there were times at which there were contaminations in the incubators, we all have agreed on that in the past. There were some that could leave behind living organisms in the incubator, which indeed could have an impact on an experiment.

0175

Or the byproducts of those organisms, I have no idea.

Q Fair enough.

The next variables that you list is the fetal calf serum, the F C S. See where I am referring to?

A Yes.

Q Did you test the fetal bovine serum lots before you purchased them?

A At the time, I don't believe we were doing detailed testing but I may be wrong about that. I know in subsequent years, we did test.

Q I am talking about these during the time that the experiments that we have been discussing that obviously led to this complaint occurred?

A So did I test -- restate the question again?

Q So did you test the serum lots before you purchased them during those periods of time?

A I don't recall. I mean, we bought one big huge lot -- oh that was after. The big huge lot was a HyClone lot. Before the HyClone lot, we would buy bottles from, I believe, Gibco and some were donate variety. And, I think, I can say it

0176

actually with a fairly decent degree of certainty that we didn't used to test them because we didn't buy it in large volume.

Q I was going to ask you did you buy large quantities of serum that would last a long time?

A Not until we bought the HyClone, we bought a freezer full. When we bought the HyClone and that was -- I don't remember when that was but they gave -- in fact, they gave us the freezer for free.

Q Do you know for a fact whether the lot of serum used by Dr. Lenarczyk was different from the lot of serum used by Dr. Bishayee?

A When?

Q During the course of them performing their respective experiments?

A I know. But which -- which experiments performed by Bishayee, the '99 experiments or the published experiments? Which ones?

Q Well either the '99, the published, or you tell me?

A I am almost certain --

Q Go ahead. I'm sorry.

0177

A I am almost certain that the serum would have been different between the '99 experiments and the 2001. I think the 2001 experiments, if I remember correctly, were the HyClone for the most part. And prior to that,

Bishayee used serum from, as I said, different sources, usually Gibco. But I do know that we had some donated serum and I don't recall if that was used or not.

Q Did you document this in any fashion?

A We didn't used to keep careful track. After this whole affair, I tried to make them keep track of these things.

Q But at least during the time that we are speaking of the experiments, you did not document?

A They may have been documented.

Q They may have been but...

A You would see it on the -- you know if we go back and look at these experimental documents all the way back to '99 if it was documented, you'd see it on the lab reports.

Q So in other words if they did document it there would be a notation on the experiment insofar as what lots were used and at

0178

what time?

A Correct.

Q And if there is no -- if there is no notation it is reasonable to conclude that it was not documented?

A Yes.

Q Do you recall whether at the time Dr. Lenarczyk was doing his tritium experiments whether Dr. Bishayee was doing similar experiments using radioactive iodine?

A At the time that Lenarczyk -- try me again?

Q At the time Lenarczyk was doing his tritium experiments do you recall --

A Which tritium experiments?

Q The 50 percent or the hundred percent?

A Which cells?

Q I don't know.

A Okay.

Q I don't know.

A Okay. So what is the question?

Q Do you recall whether Bishayee was doing experiments using iodine, radioactive iodine?

A I would believe the answer would

0179

probably be yes.

Q And which cells was he doing those experiments with?

A Bishayee would have been V79's. From which freeze, I can't recall.

Q Do you recall whether Dr. Bishayee indicated he was having any problems with those iodine experiments?

A Not that I recall.

Q So if there is no notations on the

various experiments regarding serum that --
A I know that there is some notations in some of these documents regarding serum. There is definitely some notations so go ahead.
Q Whatever level of notations that there are does that permit you to show conclusively that either yourself or Dr. Lenarczyk were using different serums from that used by Dr. Bishayee in regard to the published experiments?
MR. LEONARD: Objection to form. You can answer.
A Yeah. I don't know if the published experiments indicate the manufacturer and lot number and so on of the serum. Because even serum from the same manufacturer would be highly dependent, or

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could be highly dependent, on lot number.
Q What affect would the serum have on the rate of survival in the hundred percent experiments?
A It depends on what is in the serum. I mean, the serum comes from -- they have a bunch of animals. Where those animals are from, I have got no idea. They're probably not the same animals as the last batch. So, you can imagine that if I took your serum and I took her serum and I took my serum and so on and so forth, I could imagine that the chemical constituents within those serum might be quite different.
Q I understand what you're saying that you could imagine. But you don't have any actual facts or data to support that conclusion?
A No. But it's a well known -- it is a well-known fact that the constituents of sera changed and that is precisely why people typically worry about it.
Q What affect would the serum have on the rate of survival in the 50-percent experiments?
A I don't know.
Q Do you know whether a serum change would change the rate of survival -- strike that.

0181

Would you know whether the serum -- a serum change would be significant enough to have a survival change from that being expediential to biphasic?
MR. LEONARD: Objection to form.
A I see no reason to see why it is not possible. Again because whatever chemicals are in the -- in the serum could affect the response. So it is --
Q It might be plausible but you, yourself, engaged in no such experimentation to determine that?
A To determine if I could switch the shape of the curve by switching the serum?
Q Yes.

A Not specifically to do that, no.
Q Thank you.
The next item is the flasks that the cells were grown in. What flasks are you using in your lab now?
A A variety. Some of them are Falcon, some of them are probably Corning. We have different flasks in the lab and -- go ahead. Some are 225's, some are 175's, some are 25's.
Q What kind of flasks were you using in

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the laboratory at the time these experiments were going on?
A Those, I believe, were donated flasks from either Roche or Novartis.
Q In terms of size?
A In terms of that they were -- I think those were the 225's.
Q In what way were they different than the ones you're using now?
A The ones that were donated were old flasks that were not used at those facilities and we took them and utilized them. I don't know if the brand that we use now is the same, certainly the age is not. Beyond that, I don't know.
Q While I realize you list this item have you been able to demonstrate that the flasks you and Dr. Lenarczyk used in the course of your experiments had a different affect on survival compared to the survival in Dr. Bishayee's -- Dr. Bishayee's experiments?
A What I can tell you is, I have done other experiments, which I don't think were related to this, prior to this, which indeed the flask made an enormous impact and in fact -- go ahead.
Q What were those experiments

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involving?
A Survival.
Q Survival of V79's?
A Survival of V79's.
Q But insofar as the survival of -- associated with these experiments, you undertook no other experiments knowing that you could do so, based at least on what you just shared with me, to determine whether in fact these flasks had an affect on survival?
MR. LEONARD: Objection to form.
Q Is that so?
A I didn't conduct experiments to check whether or not those specific flasks, which obviously no longer existed, were -- had an affect.
Q Let's talk about the next item different V79 cells. You note that some freeze down occurred, right? Did that occur during the time that Bishayee was in your lab? Dr. Bishayee, I should say?

A Which freeze down? There is freeze downs done all the time?
Q Well the freeze down that you're referring to in here?
A Okay. Let's see. Can you give me a
0184
location so I can find -- oh this one here. The last bullet of variables that we know have changed?
Q Yeah.
A So, you're asking me whether or not those V79's were frozen by Bishayee? What is your question?
Q I am asking when did that occur, yeah. Did it occur when he was there?
A I believe -- yes. Yes. Well, which ones, the ones that minus 196 that you are saying?
Q Well let's ask that one first. The one where it says original stocks of cells --
A No that -- I believe those are prior to Bishayee. I think those original stocks were frozen prior to his arrival because those were in a little mini dewar that we had.
Q And the dewar that is the thermos that you are referring to, right, in which you used nitrogen to freeze them?
A Yes.
MR. PINCUS: D-E-W-A-R.
Q And then you say forced to use much later passage of V79 cells that were stored at 70 degrees.
So in other words these are the same
0185

cells from the original batch but they've gone on to --
A No, they're not from the same batch.
Q Well in other words insofar as how the different passages occur --
A Yes.
Q -- in terms of them being harvested and put in new plates to grow that is what you are referring to?
A So, I believe that the cells for the original experiments relative to the ones that were done later were -- I don't know for sure. Actually, I might be able to determine that. I don't know if they were from the same -- from a previous passage that originated back. I believe that they were but I am not sure.
Q So at the time you wrote this, you undertook no actual analysis to determine which cells came from where and when?
A Well no. To that extent, the cells that were used, I believe, were from 10-2000. I don't remember. Do I write that here somewhere?
Q No, you don't to my knowledge. That is why I am asking you if you made such a reference

please identify it for me.

0186

A Let's see here. Yeah it is six lines from the bottom.

Q Okay. Hold on a second. Okay. Therefore, we used V79 cells frozen in October 2000. Okay. I see where you are referring to.

A Yeah.

Q And you say also, you used V79's from A T C C. Put that in reference to time please?

A When did we do experiments with A T C C?

Q Yeah.

A Look at the docs that you circulated earlier, they would indicate A T C C.

Q You say passage numbers also not known. What does that mean?

A That means, we didn't keep track of how many times the cells had been split from the time they were removed from freezer, or even prior to that, and the time they were used. So, we have no idea how many passages these went through both through multiple freezings from year to year and at each time that there was a thaw and repeated passaging.

Q When did you lose your dewar do you remember?

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A The dewar?

Q Dewar, I'm sorry.

A The dewar -- when we went to open the dewar to retrieve cells to do additional experiments, the dewar was warm. And the date of that, I don't recall specifically.

Q To your recollection in reference to those experiments of Dr. Lenarczyk, which you identified as possibly showing biphasic results, that the dewar failed subsequent to the date in which the experiments were performed, or was it before? Do you have any recollection sitting here today by way of time?

A Did the dewar fail before he did his experiments?

Q Or after --

A When the dewar failed, I don't -- I don't recall specifically. We went to retrieve cells and I can indicate to you that we did add liquid. We tried to restore that dewar so it was warm. We added nitrogen to the dewar and it boiled off in very short order.

Q So, you can't give me a firm date if I understand you?

A Not that I can recall.

0188

Q Is there any documents that you know that would refresh your recollection in terms of pinpointing a date of when that occurred?

A I did provide the records for cell storage, I think to -- they're in a composition notebook or something. I think I provided those so there may be records. There should be records of that.
Q That's where they would be located if you provided them?
A I believe so.
Q Describe it for me one more time please?
A There is a notebook where one writes, you know, notes about cells that are in the dewars. Now did I write that the dewar failed, I don't recall. I don't know. Or did somebody write it, I don't know.
Q When did you start to use liquid nitrogen for a freezer?
A I bought that dewar when -- when I arrived at the University, I believe, in 1987.
Q So is it possible, or to your recollection, that in fact Dr. Bishayee used cells from that freezer?

0189

A I would assume that because that was the dewar that we had at the time. I believe that was the only dewar we had at the time that was prior to any of the other dewars, which were donated by again, Roche or somebody.
Q So are you telling me that cells that are frozen at minus 70 degrees in a freezer that doesn't contain liquid nitrogen are different from cells frozen in a freezer that does contain liquid nitrogen?
A They certainly could be different but that's not what I just told you. But they could be --
Q I know that is not what you told me. I'm asking are you telling me -- telling me that that was the case in this instance insofar as you are talking about the freezers?
A No. The purpose of that was not to say that the temperature is affecting the cell it is a different passage, that's what I was trying to get at is the source of those cells is different. However, temperature could indeed affect if you kept the cells for a long period of time, keeping them at minus 196, is well known to be preferred over minus 70 for long-term storage.

0190

Q But did you in fact do any kind of documentation to show whether this was in fact occurring?
MR. LEONARD: Objection to form.
Q The change in the cells based upon whether it be liquid nitrogen or not?
A Again no. The concern here wasn't this isn't indicated to be the temperature the

problem here is the passage. So the early passage cells were in the dewar, the very early passage cells were in the dewar -- in the minus 196.

Q When you did the repeat experiments that we were referring to a little earlier in 2001, you used cells that had been stored at minus 70 degrees to your knowledge?

MR. LEONARD: Objection to form. You can answer.

A In the -- in the repeat experiments?

Q Yes.

A I don't remember what temperature they were stored at. And again the issue regarding the cells is intended to be a statement about the passage -- the source of the cells not the temperature at which the cells were stored even though temperature could have an impact. So, I

0191

don't know what -- offhand what temperature they were kept at.

(Whereupon, a recess was taken.)

BY MR. PINCUS:

Q Let me turn your attention -- I think you are on the same page as I am but in the last paragraph halfway down, you make reference to -- with the help of Gibco that was the serum manufacturer --

A Yes.

Q -- as I recall?

A Yes.

Q You were eventually able to track down some of the original sera that was owned by an investigator at another institution.

A Yes.

Q Do you know who that was?

A I don't recall the name. But I didn't get it from them directly or did I? I think -- yeah maybe I did. I don't remember if Gibco facilitated it or not.

Q You can't tell me what other institution that was?

A Not off the top of my head, no.

0192

Q And this serum was stored by them and us at minus 20 degrees centigrade and used in one of the 50-percent labeling experiments and note survival bystander effects were observed?

A Yes.

Q So did that in any manner influence your thought process that serum change did not have an affect on survival?

A Yes and no. We used to maintain the serum at minus 70. And I did contemplate whether or not minus 70 versus minus 20 could have an impact on the serum and believe that that may indeed be possible. Because normally, you would not want to

store serum at minus 70. But I didn't know that at the time to -- so that is how I kept it thinking it was better for the serum.
Q While it may have been possible did you determine whether any facts that leads you to believe -- that leads you to conclude that it was influential on the issue?
MR. LEONARD: Objection to form. You can answer.
A I had learned by this point that storing serum at minus 70 is not recommended.
Q Is there a reason why or -- well

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strike that.
Your report, or your summary here, it doesn't indicate that you used any of this original serum for purposes of replicating any of the hundred percent experiments. Is that correct?
A I don't know.
Q Well, your report doesn't say that it did.
A Oh yeah, I don't know if -- let's see. It may not say it, yeah.
Q Do you have any data to show that a different serum lot had an affect on the hundred percent experiments?
A I would imagine that the hundred percent experiments were carried out with different serum lots because the experiments that Bishayee did back in '99 or '98, or whatever it is, would definitely have been a different serum lot than what was used in 2001.
Q You didn't form any hypotheses in regards to the hundred percent experiments in regards to serum, did you?
A No. My focus on the hundred percent experiments was completely on looking for a mutation response, that is what I had my focus on as I was

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trying to get at that.
Q So, you didn't do anything insofar as the survival on those experiments is what you're telling me?
A I didn't do anything --
Q Well insofar as analyzing changes in serum?
A No. I was focused on the mutation arm, or, I should say, not that I can recall because I am pretty sure that I didn't but...
Q Well if that were the case if you go to Page 3 --
A Yep.
Q -- can you explain to me what is meant by the phrase therefore, I expected an expediential survival response. When a hundred percent of the cells were labeled and Anupam's experiments did reveal this then I expected to

observe a saturation of 50-percent survival and 50 percent of the cells were heavily labeled, you know, and so on.
So if you were --
A I am referring to historical there, right?
Q I don't know. That is why I am
0195
asking you to explain, in light of your comments, what that refers to?
A Yeah. The second sentence of the paragraph says, I have a great degree of confidence in our published data for the following reasons.
Q Okay.
A So this paragraph is intended to go back in time to 1990 whatever it was, seven or something like that.
Q To the published data?
A To the published data. As to why I had and continue to have such confidence, we weren't looking -- there is things that occurred that we weren't expecting. In the case of the hundred percent, we expected expediential response that is true. We saw it in the case of 50 percent, we expected to see no bystander response because we didn't even know what it was.
Q I will take that back if you're done with your response.
A Sure.
Q Did you have any interactions or discussions with anyone from Columbia University in regards to your experiment results?
MR. LEONARD: Objection to form.
0196
A No.
Q So it is your testimony you never spoke to Dr. Persaud about your experiment results?
MR. LEONARD: Objection to form.
A Not -- I wouldn't even know what Dr. Persaud's face looks like. Somebody at one time from Columbia called to ask about a concentration how many microcurie per M L and that is all I can recall.
Q Did you ever speak to Dr. Z-H-O-U? I don't know how to pronounce that.
A He might have been the one who asked me a what concentration -- how many microcurie per M L to use, or something like that.
Q How do you pronounce that name do you know? Is it Zhou --
A Zhou, I presume.
Q Sarah Baker did you ever speak to her about your experiment results?
A I don't know who Sarah Baker is.
Q Dr. Hei, H-E-I?
A Never to Tom about the results, no.
Q Or Dr. Hall, H-A-L-L?

A So at what point in time back in 2000 and whatever? No.

Q Were you familiar with an article that those individuals, who I have just identified, wrote that is entitled assessment of low linear energy transfer radiation induced bystander mutagenesis in a three-dimensional culture model.

A I saw that in the literature yes. That is the first article of their's, or the second?

Q Well, I see this is published in Cancer Research in 2005.

A That is the first one.

MR. PINCUS: Can you mark that please?

(Exhibit Howell-30, Article, is received and marked for identification by the reporter)

BY MR. PINCUS:

Q Dr. Howell, I am going to show you what we have marked as Howell Exhibit 30. You say you had occasion to review this literature?

A I have looked at this article, yes.

Q And when did you do so as best you recall?

A I don't recall.

Q In reviewing this article did you have occasion to review Page 9879 and in particular, Figure 3, insofar as survival data associated with bystander experiments that they were performing?

A I did see that. I saw that they had done a survival study, yes.

Q Looking at this literature and in particular, Figure 3, would you agree that the results that they show in this figure do not show an expediential rate of decline in survival?

A That is debatable.

Q Tell me why?

A Because if you exclude the control point the other ones do show an expediential decline.

Q The control point is where please?

A At one, the survival fraction of one.

Q So all the way up at the top of the vertical axis is where you are --

A Yes. To the far left.

Q To the far left?

A Yes. At zero microcurie.

Q Why is the control included in there, if you know?

A Typically, you compare survival against the untreated controls, or in this case it would be no radioactivity in the cells, I presume.

Q So the purpose of the control is --

does assist for determining whether there is survival or not. Is that what you're saying to me?

A Yes it does. But you could have a systematic error, which would make both curves get knocked or lowered in the same fashion. And that could, in principle, explain why you have four points that are expediential response and then you have a control point that is above.

Q Would you agree that the results in this figure don't resemble the survival kinetics that were set forth in the two papers that we looked at earlier, Howell-10 and 11?

A You're going to have to rephrase kinetics of survival.

Q When I say kinetics, I am using that insofar as defined as a rate of survival.

A Rate implies time. So are you trying to imply time, or -- I am not sure where you are going with this.

Q I am not talking necessarily in time, I am doing it as a function of dose.

A Okay. Well kinetics implies time and rate implies time. So try me again.

0200

Q Okay. Then let's just say insofar as survival is concerned does the figure that you have before you in this paper resemble the rates of survival that were set forth in the two papers that we looked at earlier, Howell-10 and 11?

A We will have to go back to 10, 11 and compare the X axis again.

Q Okay. Let's do that.

Here is 10 and 11.

A Okay. So, which one would you like me to look at?

Q Let's look at 10 first.

A Okay. So, which curve are you asking me to compare?

Q I have to dig it out. I have to dig out my copy. Bear with me a moment.

So in Howell-10 we are looking at Bates stamp 402, Figure 3.

A Bates stamp -- Figure 3. Okay. So --

Q So in that instance, I'm saying would you agree that the shape of the survival curve is different in -- I'm going to call it the Columbia Howell-30 versus Figure 3 set forth in Howell-10.

A Can you tell me what is being plotted

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on the Columbia figure please?

Q I don't know. Can you tell me based on your reading of this?

A Well, you should know that -- if you're going to ask me the question -- because if you're going to ask me to compare this and this, you better have a darn good reason to do so. Okay? And

I suggest you do a little bit of studying before you ask the question.
Q So, you're telling me you can't answer the question?
A I am telling you that you're asking a ridiculous question, that is what I am telling you.
Q Okay.
A I am telling you, you're asking a completely uneducated question that indicates that you have no idea what is going on.
Q I respectfully disagree with you.
So, you're telling me you can't answer the question?
A No. I didn't say that I couldn't answer it, I just did.
Q Then answer it?
A I answered it and said that you're uneducated in the facts regarding these two figures
0202
and therefore, you have no business asking the question.
Q I will ask the questions. What does Figure 3 in the Columbia paper show and tell you please?
A Figure 3 says tritium activity. What tritium activity?
Q Okay.
A Tell me?
Q I get to ask the questions here, sir.
A I get to ask a question too because I can't answer the question if you can't tell me.
Q Okay. Then if you can't answer the question that is all you have to say, you can't answer the question.
A I can tell you very firmly that this tritium activity has absolutely no relationship to this tritium activity here that I can tell you.
Q Why is that?
A What does this one represent?
Q Why is that, sir? Please answer my question.
A If you spent any time looking at this and having spent centuries doing so, she ought to know better than to ask you to compare these two. I
0203
mean this is ridiculous.
Q Why is that, sir? Please answer my question.
A This, I believe, is microcurie per M L in the culture medium. It has nothing to do with what is in the cells.
Q Yes.
A Okay? This one here has the kilo-Becquerel per the cluster. So yes indeed, they show a bystander effect here but it is on a completely different plot than this one. So yes indeed a bystander effect seems to exist here but to

ask me to compare this one necessarily to this one --
Q You can't do it --
A I can't do it directly.
Q Then you have responded to my question.
Now let's go to Howell Number 11 if you would please. And go to Page 412. Same question.
A 412, which one is that?
Q Figure 1.
A Yes. Again this is plotted against mili-Becquerel. Okay? This one is plotted against

0204

microcurie per M L. Clearly, you can see the one place that you could draw a connection might be right here, which is on this one.
Q Which one are you on, 10?
A Ten. I am trying to find the uptake. There is a bunch of -- as a function of kilo-Becquerel per M L but I don't see it.
So this one is in terms of microcurie and the medium and the other one is in term of mili-Becquerel per cell. So clearly, the axes are different, both are demonstrating a bystander effect. However this one does not have the uptake in the cell.
Q Okay.
So, you're telling me that the Columbia group in the 50-percent experiments that they performed found a bystander effect. Correct?
A Yes.
Q And as we have reviewed some of the 50-percent experiments that you did with Dr. Lenarczyk this morning, you indicated that there was not a bystander effect. Do you recall?
A In the Lenarczyk experiments, yes.
Q How do you explain the fact that they observed a bystander effect and you and

0205

Dr. Lenarczyk did not?
MR. LEONARD: Objection to form.
A This is a A sub L cell. You are talking about Marck's A sub L? That, I have no idea.
Q Okay. That is what I wanted to know. I will take these back. Thank you.
Did --
A Is there the capacity to strike and revisit this document?
Q Well when I am done if your counsel wishes to ask you some questions --
A Is there a capacity to strike and readdress --
Q I am done asking you questions about that.
Did anyone else in your laboratory

every replicate the hundred percent survivals that Dr. Bishayee showed in the articles in 1999?
A Try me again?
Q Did anyone else in your laboratory every replicate the hundred percent survival experiments that Dr. Bishayee sets forth in the literature, the Howell-10 and 11?
A That I can't say for certain, I'd

0206

have to look.
Q Look at what?
A I would need to review all the data from the lab to see if there is a hundred percent experiment that matches the original. We did look at one earlier in which we noted that the D37 was two mili-Becquerel, I believe, versus .8 mili-Becquerel. So that is quite close to the original hundred percent.
Q Any other experiments come to mind?
A We can look back and go over them all again.
Q Well, I am saying sitting here --
A I just cited one to you. I'd have to look at the D37's on all of the other ones.
Q What about the 50-percent survival? Same question.
A The 50-percent survival? Those tell me exactly what you want to compare.
Q Did anyone else in your lab ever replicate the 50-percent survivals that are represented in the literature, Howell-10 and 11, that Dr. Bishayee performed?
A With the V79's?
Q Yeah.

0207

A The V79's, we have not since seen that response with the different subline. So again the same passage of cells was not used and with all of the other caveats regarding the medium and so on.
(Exhibit Howell-31, Experiment dated 4/2/01, is received and marked for identification by the reporter)

BY MR. PINCUS:
Q Dr. Howell, I know we were talking about Helena tubes and things. Would you take a look if you would please at Howell Exhibit 31?
A Yes.
Q This document appears to be associated with an experiment which identifies the investigator as Dr. Lenarczyk. And it is dated April 2, 2001, experiment is a 100-percent cluster confirmation. Do you see where I identify that?
A Uh-huh.
Q What was the protocol of this experiment and do you know?
A That protocol, I don't believe I

typed up so that was typed up by somebody else. I don't think I made that protocol.

Q Are you familiar with this document at all?

A Not that I recall.

Q This protocol, tell me if you can discern, appears to have used larger tubes than the Helena tubes. Is that correct?

MR. PINCUS: Excuse me, I need a break for a second.

(Whereupon, a recess was taken.)

BY MR. PINCUS:

Q So if I understand, you're not familiar with this document?

A No, I am not familiar with this document.

Q That is all I need to know.

A Whose writing is that on the right?

Q Well, I was going to ask you. Can you identify that?

A No. I don't know whose writing that is. It looks like it may be Lainie's, I don't know.

Q But you're not sure?

A I am not sure.

(Whereupon, a recess was taken.)

(Whereupon, that concludes Volume I.)

C E R T I F I C A T E

I, LORI YUCHT, LICENSE NO. 30XI00200400, a Notary Public and Certified Court Reporter of the State of New Jersey, do hereby certify that prior to the commencement of the examination, DR. ROGER W. HOWELL was duly sworn by me to testify the truth, the whole truth, and nothing but the truth.

I DO FURTHER CERTIFY that the foregoing is a true and accurate transcript of the testimony as taken stenographically by and before me at the time, place, and on the date hereinbefore set forth, to the best of my ability.

I DO FURTHER CERTIFY that I am neither a relative nor employee nor attorney nor counsel of any of the parties to this action, and that I am neither a relative nor employee of such attorney or counsel, and that I am not financially interested in the action.

_____

LORI YUCHT, C.C.R.