FEDERAL TRADE COMMISSION

I N D E X

IN RE POM WONDERFUL LLC, ET AL.

TRIAL VOLUME 11

PUBLIC RECORD

AUGUST 30, 2011

UNITED STATES OF AMERICA

BEFORE THE FEDERAL TRADE COMMISSION

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| In the Matter of | ) | |
| | ) | |
| POM WONDERFUL LLC and | ) | |
| ROLL GLOBAL LLC, | ) | |
| as successor in interest to | ) | |
| Roll International Corporation, | ) | |
| companies, and | ) | Docket No. 9344 |
| STEWART A. RESNICK, | ) | |
| LYNDA RAE RESNICK, and | ) | |
| MATTHEW TUPPER, individually | ) | |
| and as officers of the | ) | |
| companies. | ) | |
| | ) | |
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Tuesday, August 30, 2011

9:34 a.m.

TRIAL VOLUME 11

PUBLIC RECORD

BEFORE THE HONORABLE D. MICHAEL CHAPPELL

Administrative Law Judge

Federal Trade Commission

600 Pennsylvania Avenue, N.W.

Washington, D.C.

Reported by: Josett F. Whalen, RMR-CRR

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P R O C E E D I N G S

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JUDGE CHAPPELL: Back on the record Docket 9344.

Good morning, everyone.

MR. FIELDS: Good morning, Your Honor.

JUDGE CHAPPELL: Are you ready to call your next witness?

MR. FIELDS: We have our opening statement that we reserved, Your Honor, if I may go ahead with that with your permission.

JUDGE CHAPPELL: Before you do, and I'm not sure who is going to speak to this, but were the IT issues resolved?

I'm talking about the flurry of e-mail coming in last week about some exhibits that may or may not be clear on the screens.

MR. GRAUBERT: Right. Yes. Thank you, Your Honor. And I want to express our appreciation to the FTC IT staff, who have substantially improved the image, and I think it's as good as it's going to get. And we have of course hard copy backups.

The main problem is, when the entire page is on the screen, it's not really the highest quality, but when the selections are blown up, they're perfectly legible. I don't think it's going to be a big problem.

Certainly, if it continues to be a problem, we can try to address it again. But the staff has really done a terrific job in bringing it along.

JUDGE CHAPPELL: Has something changed from the last time we were here? Because I thought everything was fine.

MR. GRAUBERT: We did have a little problem last time when the respondents were using the system. The FTC's staff for some reason has no problem. But, as you might recall, Your Honor, a few times when we did in cross-examination or otherwise put up an image of just one page on the screen, it was hard to figure out what it was, and we've been trying to address that problem. As I said, we've made some improvements, and I think it's as good as it's going to get.

But thank you for your consideration, sir.

JUDGE CHAPPELL: Okay. And one other issue, I saw an e-mail that came in last night regarding government operating status. And the policy is, when the status is liberal leave or what's called unscheduled leave is in effect, we don't have a hearing. And that policy stays. That's because the people in this room are not the only people involved when there's a crisis in the area, whether emergency or other situation, so that the people in this room can't

really get together to agree to waive the rules of OPM.

And the lights have to work. The air condition has to work. There's a lot involved beyond the people sitting around and standing here today. That's why, when the status is unscheduled leave, even though the government is open, we have no hearing, so everybody knows, nobody has to worry about it, nobody has to try to get here in a dangerous or unsafe condition.

Any questions on that?

MS. HIPPSLEY: No, Your Honor.

MR. FIELDS: No, Your Honor.

MR. GRAUBERT: I appreciate that.

MR. FIELDS: Okay. Thank you, Your Honor.

I'm a little hoarse today, and if you can't hear me -- I think you probably can, but let me know.

I don't think we'll have a big problem with demonstratives because in opening statement I usually don't use a lot of demonstratives, maybe one or two. But let's get going.

Your Honor, when we first came into this courtroom, the very first question was: Are the respondents snake oil salesmen? And I think we're going to show you that that's a resounding no, not even near it. I don't even think that complaint counsel really thinks we're snake oil salesmen.

JUDGE CHAPPELL: I think my question might have been if that's the allegation.

MR. FIELDS: Okay.

JUDGE CHAPPELL: Not whether they are.

MR. FIELDS: Okay. In any event, we're not, and we're going to show you we're not.

And this is about pure fruit juice. It's not a drug. It's pure fruit juice.

We're not Daniel Chapter One either. We're going to bring before you, Your Honor, a group of doctors distinguished in their field, not a bunch of testimonials unsubstantiated but doctors.

We are talking about something that is safe. There's not the slightest evidence that it's unsafe. And we're talking about something that is not like, as in Daniel Chapter One, a concoction of various herbs that could be toxic.

JUDGE CHAPPELL: Well, the record can reflect, I'm in no way, shape or form comparing your client to Daniel Chapter One.

MR. FIELDS: Thank you, Your Honor.

We have never ever told anyone not to listen to their doctor. There's no evidence we've ever done that.

We've never told anyone that they should drink

pomegranate juice instead of having proper medical treatment. There will be no evidence of that, and we will show that that did not happen.

We have massive science to back our claims, not just some science, which is the case in the cases referred to, not just some reliable science but massive science. We're talking about 90 separate studies -- I think it's probably over that now -- and 44 different institutions, Your Honor, institutions like Johns Hopkins, M.D. Anderson in Houston, the Mayo Clinic, UCLA medical school, Cleveland Clinic, I mean, extraordinary places that have done these studies with extraordinary doctors.

Sixty-seven of them, probably seventy by now, have been published in peer-reviewed journals. They're out there to be criticized, and whatever criticism doctors make will be on the record in these peer-reviewed journals.

You know, there are criticisms of our studies. We'll get into that. I'll get into a little more detail as we go along. But you can criticize any study. And if you hire an expert to criticize a study, you can bet your bottom dollar he will find things in that study to criticize.

But there's no way that the multiple studies

here that support what we've said can just be ignored. Even if you believed all of the criticisms of those studies, it still would not be enough simply to ignore them. It would at most be a medical disagreement.

We're going to show some history, not a lot because Your Honor has already had some in the first session. We're going to -- Mr. Resnick will tell us about how he got into the pomegranate business but before that -- and I think Your Honor has already heard -- that pomegranates have been eaten for centuries. They are mentioned in the bible. They were eaten even before the bible in many different cultures who thought they had medicinal qualities.

Mr. Resnick, in the agricultural business and raising citrus crops and nuts, buys some acreage, and it has some pomegranate trees on it.

Now, he learned about the history of the pomegranate, heard about the possibility that it might have medicinal effect based upon what these ancient cultures thought. That doesn't make it true, but he wanted to find out.

He's a man, you will hear, particularly interested in health issues since he is himself a prostate cancer survivor and thus naturally interested in anything that has helped with health.

And so he started with beginning with his family doctor and then adding to that medical advice leading scientists first in his own area, UCLA, because he lives in Los Angeles and then other places, like the ones I've mentioned.

He has meetings with distinguished doctors who recommend particular treatments. He follows those recommendations. He doesn't try to game the system by just picking out those studies that he thinks would advance that are getting a positive result.

He's not doing these studies to support advertising. He's doing these studies because he wants to find out what the real facts are. Your Honor will hear from the doctors involved that that is the procedure that he has followed.

Now, let's turn to the -- well, before I head to the standard of evidence that we're going to talk about, this business is losing money. Mr. Resnick hopes it will start making money, but right now it's losing money.

Why is it losing money? A couple of reasons.

One, pomegranates are very expensive to handle. They require individual handling. They require handpicking. They're sensitive. And it's very expensive.

But secondly, there are people out there in the marketplace who are selling what they purport to be pomegranate juice. It really has something like 2 percent or 4 percent of pomegranate juice in it.

That's why, as Mr. Resnick I think testified before and will explain now, he has thought about applying for FDA drug approval, not because it's a drug -- certainly pure fruit is not a drug -- but because that will differentiate his product from everybody else's product, from the guys who are selling 2 percent, and that's why he has contemplated filing for FDA approval. That has not happened. It may never happen. The FDA standards are not relevant to this proceeding.

Now, the first issue that we need to talk about is the standard of substantiation that's required. And there is testimony from both sides -- or there will be testimony from our side on that. There's already testimony from theirs.

We will present our evidence through the prism of a brand-new Supreme Court decision in 2011, the Matrixx case. That's 131 Supreme Court 1309. And in that case -- I'll just read briefly from it -- what it does is it holds that scientific evidence is not limited to RCT tests, and it is not limited to things that meet

what's called statistical significance, that there's a lot more scientific evidence that's valuable that doesn't meet those standards.

And if we can just put up --

MR. GRAUBERT: It's up.

MR. FIELDS: It's up. Oh, it's up. Okay. Well, Your Honor can read it.

"A lack of statistically significant data does not mean that medical experts have no reliable basis for inferring a causal link between a drug and adverse events...

"Medical professionals and researchers do not limit the data they consider to the results of randomized clinical trials or to statistically significant evidence."

That's the United States Supreme Court, Your Honor.

And that's really consistent with the cases in the D.C. Circuit that talk about some reliable evidence is what you need.

Our experts will tell Your Honor that when you're talking about pure fruit and fruit juice as opposed to a drug, you do not have to have these usually expensive, randomized, controlled, double-blinded, placebo-controlled tests that we call

RCTs. They will tell you that drugs require that kind of testing because they can have hideous side effects that could kill people and that they sell for a price that can justify the kind of expense that these studies require.

Your Honor will recall the testimony of their experts who said, well, it could cause 600 million or 60 million or even as low as 6 million. Those are big numbers. And when you are selling a drug that can market for a hundred or two hundred thousand dollars for treatment or course of treatments, you may be able to afford that. But when you're selling fruit juice at a few dollars a bottle, that's just out of sight, and you couldn't afford to speak of what your health benefits are if you are limited to this kind of RCT.

And that's why, among other means, our experts will testify, as the Supreme Court indicates, that you're not limited to RCTs in deciding what is reasonable evidence.

The second thing that makes our case in this area -- and this is unusual. It doesn't happen to me much -- is their experts.

Now, why do I say that. Well, on cross-examination and in their own writings they made it very clear that RCT tests should not be required.

Let's talk about their actions for a moment.

I'm sure Your Honor remembers Dr. Melman, the guy with the miracle cure for ED who called it the fountain of youth. And he told The New York Observer, a paper of general circulation in New York City, that this would cure young men of the inability to get erections. He had no RCTs, as he admitted here.

Dr. Stampfer, their lead expert, conceded telling the press that moderate alcohol use would cure -- pardon me -- prevent all kinds of disease, a whole list of them. He had no RCTs to support that.

Now, so our case will ask, well, if beer and wine can get by without RCTs, are we going to demand those drug tests of RCTs for pure pomegranate juice? I don't think so.

You know, their writings support our case. They make our case.

Dr. Stampfer and his partner, Dr. Blumberg, wrote the lead article on this subject. They flat out said -- this is in evidence, Your Honor, before the court -- they flat out said RCTs are inefficient and not feasible in dealing with nutrients.

JUDGE CHAPPELL: Let me back up a second there.

You're talking about beer and wine. Are they making claims in ads and on tags around the neck of the

bottle?

MR. FIELDS: I can't tell you that, Your Honor. I don't know. But I know that he went public with a claim that beer and wine -- moderate alcohol use he said would prevent various diseases. He had no RCTs in making that claim. I cannot tell the court that he did that on the neck of a bottle. That's true.

Okay?

But their writings, Your Honor, Dr. Stampfer's writings -- this is a learned article. In fact, I'd guess it's the lead article on this substantiation standard. And Dr. Stampfer himself, their lead expert, said you don't need RCTs for nutrients. He said that the RCT study is not an efficient way of testing nutrients, and he distinguished drugs where he said it could be an efficient way and where the expense is justified from situations like ours where you have a nutrient, so you have that.

But perhaps, Your Honor, the most dramatic making of our case by their experts was Dr. Sacks. Your Honor will remember Dr. Sacks saying right here on the stand that fruit need not be rigorously tested -- he said not tested -- because it's been tested already as a group in the DASH diet, and because people could select any fruit they wanted, fruit as a whole was

exempt from this drug testing kind of standard.

And he even conceded on the stand that that applied to pomegranates. Now, at first he said, Well, but that doesn't apply to fruit juices, just fruit. But it turned out that fruit juice was treated exactly the same way as fruit in the DASH diet, which is what he was talking about. We had that before the court. And ultimately -- and the record will show this -- Dr. Sacks even conceded that fruit or fruit juice are exceptions to the kind of testing required for a drug by the FDA.

So when we get to policy, I think everybody agrees on what the appropriate underlying standard is; and that is, we balance the risk of harm against the potential benefit to the public in releasing the information. I don't think anybody disagreed with that. Their experts, when I asked them that, went along with that as an appropriate test.

And here, there is no risk of harm. There is no evidence of any unsafety. This product -- pomegranates have been eaten for centuries without a single report of anybody being harmed.

Respondents have done test after test after test. I've already talked about the number of tests they've done. Nobody was ever harmed in those tests,

nobody. And all of those tests require safety. You've got to stop a test if it starts to produce results that indicate harm to anyone.

So this is a safe product.

Now, turning to the individual areas that are the -- in issue before Your Honor, there are three that are the basis of the ads in question, heart, prostate and erectile function.

JUDGE CHAPPELL: Let me back up a second, Counsel.

MR. FIELDS: Sure.

JUDGE CHAPPELL: Isn't an important issue in this case not so much what's out there, what's published, what's written, but what's used in connection with marketing and advertising the product for sale to the public?

MR. FIELDS: I agree with Your Honor that is the issue. But in deciding that issue we have to look to the science and to the testimony as to what are appropriate tests of the science supporting those ads. And the science supporting those ads, as our experts will tell Your Honor and their experts said, when you're testing a drug -- a pure fruit or fruit juice, you have a different standard from when you're testing a drug.

Now, that applies whether you're talking about an advertisement or a statement to the press. It's what do we need to show that a product is safe and that the risk of harm is outweighed by the public benefit, what do we need to show that. It doesn't matter whether it's an announcement to the press that we're making or a hang tag on a bottle. The test is logically the same.

What do we need to show Your Honor that there is science sufficient to support these claims. These claims are made in ads. I agree with that. But the kind of science that supports it is determined by what scientists believe is appropriate to support it. That's my recollection of the cases.

JUDGE CHAPPELL: Well, you're talking about safety, Counselor. What about going beyond mere safety and making health benefit claims?

MR. FIELDS: Of course, Your Honor, we have to support those. No question about it, we have to support those. But what is the test? The test doesn't require RCTs because the test is the test.

In Dr. Stampfer's article, in the comment of Dr. Stampfer and in the opinions of our experts which you will hear say that you don't need to show that there is, let's say, a lessening of plaque in the main

coronary artery as a result of using POM via an RCT, although we did. We do have an RCT. Most of our science is based on RCTs, but not all of it. And you don't have to have an RCT to show those things, and that's -- that sets the standard by scientists of what you need to show that.

Now, whether you're showing it in a public speech or you're showing it in a written scientific article or you're showing it on a hang tag, the amount of science needed to support it is the same.

You're talking about pure fruit juice here, just like blueberries or broccoli.

JUDGE CHAPPELL: Not broccoli juice I hope.

MR. FIELDS: Well, I'm not prepared to concede that, Your Honor. It could be good. All right. Okay.

Now, turning to the science -- and I'm not going to cover every study because there would be studies all over the place -- let's talk about heart.

Well, first our experts are going to explain how the basic science demonstrates that pomegranate juice reduces oxidative stress.

Your Honor will recall that little kind of oversimplified chart that I put up before about how LDL cholesterol gets oxidized, and the oxidized LDL cholesterol gets eaten by the macrophages, and the

macrophages go on and they create plaque, and the plaque either breaks off or clogs the artery and reduces blood flow to the heart and you have a heart attack or some other heart ailment.

Well, you'll hear the basic science that pomegranate juice, by its antioxidant qualities, by its enhancing nitric oxide, tends to eliminate the oxidation of the LDL cholesterol or at least inhibit it, if not eliminate it, and it tends to do a number of other things, which our scientists will describe, that stop that chain or at least inhibit it if they don't stop it. They make it less likely that you're going to get to that heart event.

Is it a miracle cure? Nobody says it's a miracle cure. But what it does is make it less likely that you're going to go down that disastrous chain, and it improves your odds.

One of the early doctors who worked on this was Dr. Louis Ignarro. Dr. Ignarro is the Nobel Prize laureate. And he studied nitric oxide.

Nitric oxide is beneficial in that it improves blood flow to almost every organ in the body that is dependent upon blood flow. It is a really remarkable thing.

And he found that pomegranate juice contains an

extraordinary ability to enhance the effect of nitric oxide. And that, of course, is what leads to inhibiting the oxidative stress that I've been talking about.

But that's just one of the studies that were done.

Then Dr. Aviram -- you'll hear that Dr. Aviram at the Technion Institute is a pioneer in this field, kind of a well-recognized figure. Their experts concede, or one of them, that he's a fine scientist at an outstanding institution.

And he did something like 10 or 15 studies, first in vitro studies, then animal studies, then finally did a human study. We have been talking about the human study, but there were about 15 studies before that that he did studying the effect of pomegranate juice and its ability to stop oxidation of LDL cholesterol, stopping oxidative stress, generating nitric oxide.

And then he did a human study. He recruited a bunch of people with very significant plaque, what was diagnosed as stenosis. That means their artery was threatening to close because of the plaque. And what he found -- and this was an RCT -- what he found was that there there was a 30 percent reduction in plaque

among the people who drank pomegranate juice. And along with that, the people who didn't drink pomegranate juice, the people in the placebo group, got a 9 percent increase in plaque.

So you have a -- really a 39 percent comparative benefit demonstrated in an RCT test, albeit a small number of people. That's true. But you have a placebo control group, and you had this 30 percent reduction and a 9 -- versus a 9 percent increase.

Then you come to Dr. Ornish. Again, I'm not going to go into all the studies but just look at these. Dr. Ornish is, you will hear, an iconic figure. He's a nationally known pathfinder in the field of the effect of diet on the heart, on cardiovascular disease. He's done landmark studies in the field -- even Dr. Sacks said that -- and is well-known throughout the United States for his work in this field. Dr. Ornish will testify about his studies.

He did a study called myocardial perfusion. That's the way doctors talk. That means blood flow to the heart. And he found -- this was another RCT. He found that blood flow to the heart was improved, comparative improvement of 35 percent, by taking pomegranate juice. He found that there was I think it was an 18 percent improvement in the blood flow to the

pomegranate part and a 17 percent worsening among the people who didn't take pomegranate juice, who had the placebo, so he had a 35 percent comparative study.

Now, Dr. Davidson -- I'm going to get to the criticisms of these studies in a little bit.

Dr. Davidson came along, Dr. Davidson in Chicago, again they say an excellent scientist. Dr. Davidson did another RCT, studying a different thing than Aviram or Ornish. Remember, Aviram's study was people with stenosis, with very significant plaque buildup. Dr. Davidson excluded people with stenosis, significant stenosis or significant plaque buildup, normal or near normal in the size of their arteries.

And he found that at 12 months there was a benefit from pomegranate juice for the whole group, but at 18 months, strangely, there was none, that it was undetermined there was nothing better about the pomegranate juice people than the placebo people for the whole group. But -- and there was a really important "but" -- for a subgroup of people who were at high risk for heart condition because of their blood chemistry, not because they had plaque, they didn't, but because of their blood chemistry, for that subgroup there was a definite benefit at both 12 and 18 months.

And that benefit, we heard testimony there are

millions of people in the United States in that subgroup who would be benefited if the study is correct. And a lesser percentage -- and we'll have a doctor talking about what the real percentage is. It's a little bit higher than what complaint counsel said, but it is a lower percentage of benefit than Dr. Aviram got and Dr. Ornish got, but that's understandable.

Dr. Aviram is measuring people with big, thick plaque in their vessels with stenosis. And Dr. Davidson is not studying plaque; he's studying the artery wall itself. The average person in his study didn't have any plaque, and nobody had significant plaque, so he's not studying it, and naturally it is predictable he's going to get a lower percentage than the very dramatic percentage that Dr. Aviram got.

There's no inconsistency between them. All three studies show a very definite benefit to heart health from drinking pomegranate juice.

Now, there's a portfolio review, and complaint counsel spent a lot of time on it, page by page by page. I've forgotten the exhibit number, but we can get that to Your Honor. And it really attacks the heart studies which include blood pressure on that page of that exhibit.

And Your Honor may recall it said, well, we just

get a 3 out of 10. But, Your Honor, the uncontradicted evidence was that that page was directed to FDA requirements and was created in order to talk about should we apply to the FDA for drug testing.

And there are at least a couple of good reasons why the FDA and the FDA doctors would give a low score because, A, that page included blood pressure, which is something that respondents no longer advertise. Originally they had had a blood pressure ad very early in the years based on Dr. Aviram's experiment. They later, because later studies did not show that, they stopped advertising. This is many years ago.

But blood pressure is still on that page. And the FDA puts a lot of weight on blood pressure. That's very important to them. And certainly they would lower the score of anybody applying if blood pressure was not decreased.

Secondly, the FDA would not like the surrogates that were used in these experiments. The FDA allows for only -- or "validates" is the term they use -- only two surrogates in the heart field. One is cholesterol, and we'll be talking with the experts about that. And the other is blood pressure.

Now, doctors in the field -- our experts will talk about this; their experts said this -- accept far

more surrogates as ways of predicting heart problems than just those two. Doctors in the field go way beyond that.

We will show you why surrogates that we chose are correct and very valid surrogates. But because the FDA would say, hey, we don't validate those surrogates and because you've got blood pressure in there, and you only had one study on blood pressure, you would get a low score. And that's why you have that very frank assessment in the portfolio review. But, again, uncontradicted evidence, that was intended to apply FDA standards.

JUDGE CHAPPELL: But when a drug company does a study, a clinical trial, if, for example, they have a drug that supposedly lowers blood pressure, then they're going to have a target group I believe with high blood pressure to see whether it works or not.

MR. FIELDS: I think that's generally right.

JUDGE CHAPPELL: And you were talking earlier about studies versus people with arterial sclerosis versus those with no plaque, and of course you would expect if there's any improvement it would be on the people with a lot of plaque.

MR. FIELDS: That's right.

JUDGE CHAPPELL: What's your position on how do

you prove the negative? How do you run a test to show this is generally beneficial to your health with healthy people?

MR. FIELDS: Well, Dr. Ornish had healthy people. Dr. Ornish had a cross-section of people in his myocardial perfusion study, and they benefited.

Now, if you have somebody completely healthy, it's going to be harder to show of course. If you've got somebody with a pristine artery that has no swelling and no plaque and you want to show that a product helps increase that, it's going to be difficult. You can theoretically do it, but the measurement is going to be difficult, no question about it.

Dr. Davidson was encountering that, although his people were not completely normal. But in his subgroup, for example, the people who were at high risk, even though they didn't have significant plaque, they showed a benefit.

So you can do it. You can do it. It's harder to show than to show people with plaque. But, Your Honor, there are a heckuva lot of people out there with plaque, and there are a heckuva lot of people out there in the subgroup, in fact their experts said it could be millions of people in the United States in that subgroup who would have benefited, even though they

didn't start out with a lot of plaque.

So it's there. It's a benefit. It's probably less dramatic for somebody who's normal than it would be for somebody with plaque.

JUDGE CHAPPELL: How would you think the claims your client has in your client's ads or in the marketing, how do those claims differ from those made, let's say, in an ad for Honey Nut Cheerios, for cereal?

MR. FIELDS: Well, I have to confess, I don't know what the Cheerios ads say, so I can't respond to that. But I can tell Your Honor this -- and I will get to it a little later -- that there is no ad that we've got out there that says or ever said that we do or even imply that we prevent or cure a disease.

Let me talk about that a minute.

What does it mean to say we prevent a disease? That means, if you drink pomegranate juice, you just can't get a heart attack, you cannot get one. Nobody says that. Nobody possibly would believe that if we did say it.

Cure. I mean, you're going to say, if you weigh 500 pounds and drink three packs a day and eat a pound of butter a day, you can't get a heart attack just drinking a little pomegranate juice. Nobody says that. Nobody. No ad says that.

I'll go back when I go and review the early ads and talk about even about the most attacked ad that from -- by the FTC, the "Cheat death" ad that was stopped in 2005, six years ago, said it may help prevent. Even that was "may help prevent."

Your Honor, the Department of Agriculture issues a statement just about every week about something like oats -- maybe it is Cheerios -- that it may help to prevent this disease or that disease. But even that was something that was stopped.

Now, have we said we cure anything? To cure something means if you've got, let's say, prostate cancer, we take it away; if you've got a heart attack, we take it away. Nobody says that. Nobody would believe that if we said it, and we haven't said that. We haven't come close to saying it.

What we do say -- and we make no bones about this, Your Honor -- what -- well, we don't use these words, but what is implied in every one of these ads you'll look at is we improve your odds. We improve your chances of not getting sick. So does broccoli. So do blueberries. So does exercise. All of those things improve your odds of not getting sick, and we do that. And we have science to support that we improve your odds of not getting sick.

JUDGE CHAPPELL: So your position -- and by the way, people that may not have been here when complaint counsel made their opening, I questioned them as well.

Your position is that somewhere out there, somewhere out in the margins, there are claims that can be made without the double-blind clinical studies.

MR. FIELDS: Absolutely. Not even in the margin. I don't think double-blind, placebo-based tests are essential. That's what the Supreme Court says. That's what their scientists said in their articles. That's what our experts will tell you. That's the standard that Dr. Melman used to -- for his own announcements to the press and Dr. Stampfer.

And as you will hear, our experts will say they're not even efficient in dealing with nutrients for a lot of different reasons.

And by the way, Your Honor, I am very used to being questioned by courts, and I didn't take any umbrage at Your Honor asking me questions. And in fact it's helpful because it helps me focus the argument.

Okay. Let's talk about prostate a little bit. I won't go into the rest of the heart studies. We will have expert testimony on all of this.

In the probate field we have Dr. Jean deKernion. Dr. deKernion is sort of the dean of urologic

oncologists. He's been doing this for many years, a highly reputable guy, a nationally known doctor with a really extraordinary reputation.

And he will talk about the -- first he'll talk about the basic science of why and how pomegranate juice can help prostate cancer, people with prostate cancer. And he will talk about first the test tube studies, the in vitro studies, and how they showed that pomegranate juice could really inhibit and even destroy in some instances the cancerous cells.

And then he'll tell you about the really unique animal studies that were done, unique in the sense that they weren't talking about animal glands. They actually put human prostate cells into animals to see how the pomegranate juice would act on those human cancer cells, albeit in the animals. And they found again a dramatic effect in inhibiting the growth of these cancer cells.

And then you get to the human studies by Dr. Pantuck at UCLA and Dr. Carducci at Johns Hopkins. Dr. Pantuck studied the pomegranate juice, and Dr. Carducci studied POMx, the pill, which of course is a -- is also pure fruit. It's just crushed up into a pill.

Both of them showed that men who had prostate

cancer and who had had their prostates removed had their PSA doubling time -- and I'll talk in a minute about that -- dramatically lengthened by drinking pomegranate juice.

Now, what does that mean. Well, when a fellow has had his prostate gland removed, we would like to think he doesn't have any more prostate cancer, but very often, unfortunately, he does. And it may start out microscopically. It may -- it isn't going to be in the prostate because that's gone, but it could have metastasized to other places where it may not have been seen originally, and we have to predict the likelihood of that recurrence and then the likelihood unfortunately if that recurs of death.

And what is the best predictor of that? It's something called PSA doubling time. That is the amount of time in which your PSA count -- PSA is what most doctors now think is the best indicator of cancer cells that have come from the prostate. And if your PSA doubles very quickly, you may be in some trouble, and the prediction is not good. But if your PSA doubled -- is lengthened, your chances of having a recurrence come much later or at least the effect of it come much later and death come much later is enhanced.

They found that the PSA doubling time was

dramatically increased by drinking pomegranate juice.

Now, you may -- Your Honor may ask me the same question you asked me about heart; and that is, well, that's fine for men who have prostate cancer already, but what does that tell us about men who are -- haven't been diagnosed yet. Well, it does, and we'll hear Dr. deKernion give his opinion that these same experiments, these studies, all of them together, and the basic science tell us that the same process by which PSA doubling time is lengthened will also likely inhibit the development of cancerous cells in people who have not yet been diagnosed.

Lots of men over 60, a huge percentage of men, have microscopic prostate cancer. Most of them, autopsies show us, live a long time and die of something else, and they find out on autopsy this guy had prostate cancer.

So Dr. deKernion will tell Your Honor that the process that we have seen in these studies shows us that this substance, pomegranate juice, that has the ability to inhibit inflammation and oxidative stress in pomegranate juice, which is quite extraordinary, is likely to inhibit the growth of pomegranate -- of cancer cells even in men who have not yet been diagnosed.

Now, I'm not going to go -- I'll let the experts speak for themselves in these areas, so I'll turn briefly to erectile dysfunction where again you have in vitro tests, you have animal tests and you have a human test, an RCT by Dr. Forest, which showed a very definite benefit.

This is the one instance that we talked about that was a hair short of statistical significance. It was ninety -- pardon me. It was .058 instead of .05. And what that means, Your Honor, is -- and all the experts have agreed with this -- that instead of being 95 percent probably valid, it is 94 percent plus some change probably valid.

And based on the experts, based on what the Supreme Court tells us, the fact that we're talking about a fruit juice that is harmless, you don't throw out a scientific study because it's 94 percent valid or even if it was 84 percent valid than -- and not 95 percent valid.

And I've read from the court -- I believe we've given Your Honor a copy of that court opinion, but it isn't just the court. That's just common sense, when you're talking about something that creates no harm.

Sure, if you've got a drug that could kill people, maybe you want 95 percent. But if you've got

something with no harm that's 94 percent likely to be valid, you're going to say we're going to suppress that information from the public because, boy, it's three one-thousandths of a point under? I don't think so.

Now, their experts criticize our studies. And as I've said, you can criticize any study you -- there isn't a study in the world you can't find an expert to criticize, because they're complicated things. And there are criticisms. No science -- no study is perfect.

Dr. Melman, the guy with the fountain of youth, who told Your Honor that pomegranate juice was a drug, that everything was a drug, that guy said if it isn't statistically significant, it doesn't exist. That was his position. Well, that is simply not a rational position for a scientist, as our experts will say, as the Supreme Court flat out says, and as common sense tells us.

They say -- and I'm not going to cover all of their criticisms because there are a bunch of them -- they say our surrogates are not the ones they would have chosen and they're not FDA-approved surrogates. Well, they're not FDA-approved surrogates, but they are surrogates that make sense, that I think arguably are better than the FDA surrogates, and they're

surrogates accepted by doctors in the field, competent, reliable doctors in the field.

Let's take PSA doubling time.

Now, you'll remember Dr. Eastham was here. Dr. Eastham testified, right here, he said: I'd never, never say that PSA doubling time was a surrogate for recurrence or death, not predictive. Well, I showed him his own article which just flat out said it's a valid surrogate. He said that in his article. It's in evidence, Your Honor. And I'm not going to put it up on the screen, but we'll be doing it in closing argument, and I'll certainly put it up on the screen.

Then he tried to say, Well, I meant it was only a surrogate at the moment of -- the study begins, and after that, it's not a surrogate. And I said, You mean it's not the next day? It's predictive on the day the study begins, but the next day it's not predictive of anything? He couldn't explain why it wasn't or when it stopped being predictive. And the fact is, his own article shows the measured change in the surrogate over time, in PSA doubling time. His own article shows that.

And scientists -- you will hear a reputable scientist who will tell Your Honor that of course PSA doubling time is predictive and is widely accepted as a

surrogate today among urologists.

So these studies can be criticized, they have been criticized, but you can't throw them out. They are there. There's not a single objection to those studies that calls for their being ignored.

They say Dr. Davidson's subgroup was based on a post hoc analysis. That means, when he wrote up the study, went in to get it approved, that was not his primary endpoint. He didn't express it. But they found out in the course of this that this subgroup was tremendously benefited.

Now, you could say, well, you've got to do more tests. And by the way, respondents are continuing with their science. They're going on and on and on in this field and in other fields. But when you have a public benefit like this one, millions of people in that subgroup, and they could be benefited, and there's no harm to them, there's no material risk of harm here, you're going to say, well, you've got to wait five years while we do another test. A lot of people could die in that period.

And there's no denying that there are millions -- I think Your Honor will hear testimony there's tens of millions of people in that subgroup. And that's just one example.

By the way, Dr. Sacks, their expert -- and this was also in the record -- has written articles in which he did post hoc analyses of things, and he wrote articles about his post hoc analyses, so people do those.

Your Honor may remember the hypothetical I gave their experts and who were reluctant to accept post hoc analysis. I said, Well, suppose we're doing a test on blood pressure, and it shows no change in blood pressure, but it shows a dramatic reduction in cancerous tumors. Do we just keep that from the public because it requires a post hoc analysis? And they all said, Oh, no, we can't keep that from the public.

Well, this is not as dramatic as that, but it is something that could affect millions of people. And it isn't going to do anybody any harm.

And so weighing those factors, you come down on the side of releasing the information rather than suppressing it.

So what are the ads. I talked a little bit about the ads already and why it is that those ads cannot be construed as saying we flat out prevent anything or we flat out cure anything.

Now, counsel also uses the word "treat." Well, the word "treat" is a little ambiguous. We don't use

the word "treat," but they would ask the question "Aren't you saying you treat things?" Well, not if you use "treatment" in the sense of medical treatment like setting a broken leg or giving an intravenous antibiotic. That's treatment.

Does "treatment" mean help something? One would -- when they say you're saying you treat things, are they saying, well, you say you help things. Yes, we do say we help things. We help men with prostate by extending their prostate -- PSA doubling time. We help people with plaque because we're reducing that plaque very dramatically. You'll hear about erectile dysfunction and the test, that we can help that.

Is helping those things treating it? I don't think it's treating in the usual sense of the word, but if you want to tell me that helping or ameliorating something, making it -- postponing a bad effect, improving your odds, if that's help, if that's treat, well, then, okay, it's treat, but not treat in the usual sense.

Now, we've talked about just a comparative few ads. Your Honor, there -- and we'll have evidence on this -- there are 600 ads here, 500 on POM, about a hundred -- I'm rounding off -- and about a hundred on POMx. And we're talking about a very, very few of

them.

Now, they break down into four main categories.

The first category, the overwhelming majority of the ads, about 80 percent, are what we call qualified ads. They simply don't make a definite claim of pomegranate juice achieving any particular effect, in other words, things like we have encouraging results, we have hopeful results. I mean, that is not making a definite claim of an effect, just, look, this is hopeful, this science gives us something to be encouraged about.

We have -- in the second category we've included ads that say, "We fight for heart health." Well, "fight for heart health" doesn't mean you win that fight, doesn't mean you're preventing heart attacks. It does. It helps. It removes plaque. It improves blood flow to the heart, which will kill you if you don't have proper blood flow. That's what Dr. Ornish's study shows.

So we do fight. But these are not -- they're not claims that we actually bring about an effect of ending the disease or preventing the disease or anything like that. We improve the odds. These ads don't even talk about improving the odds.

The second batch of ads -- and now we're talking about the remaining 20 percent -- are what we call

antioxidant ads. They're ads that say things like antioxidants are beneficial in that they fight free radicals, and free radicals can prevent disease, and pomegranate juice is a source of antioxidants.

Well, I mean, that is hardly saying we prevent or cure a disease. That is saying antioxidants fight free radicals. Free radicals are molecules. We'll have testimony on that.

It's like saying protein is essential to life, and beef is a good source of protein. Well, that's not saying that beef is essential to life.

And here it's three steps. Here it's antioxidants fight free radicals, free radicals can cause disease, and pomegranate juice is a source of antioxidants, which it is. It is a source of antioxidants, and antioxidants do fight free radicals, and free radicals do cause disease, not only can, do.

The third group of ads are called money spent -- we call them money spent ads -- Your Honor has heard about those -- when we say $25 million in science supports our position or supports our claim or whatever the language is.

And the number is accurate in every case. There's no evidence that it was untrue. In fact, it's understated because it doesn't include a very large

amount of overhead. It's only direct expense. Overhead like the salaries paid to people who are involved in these things, fees, rent, that's not included, so if anything, it understates.

Now, I think the beef of complaint counsel is it lumps all science together and says we've -- we've spent 25 million, or whatever the number is in a particular ad, not just on a particular experiment that you may be talking about but on all of our science. And that's true. But that's because all of that science is interrelated. We have spent $25 million on science, and it does back these things.

And for example, nitric oxide is important not just to erectile dysfunction, which it is, but to the heart, to many parts -- any part of the body that's dependent upon blood flow. It's important to the brain and to the process that causes strokes, to just about everything in the body. You will hear that from our experts.

So when we do studies that involve nitric oxide, even if it's in a test tube, that's something that relates to everything we're stating, even studies that have a null result. And by the way, Dr. Sacks freely conceded -- and our experts will agree with that -- that when you have a study with what we call a null result,

that is, it doesn't prove what you set out to prove, that is not proof of the negative. It doesn't prove it doesn't work. It just proves you haven't shown it in this study.

So even those studies -- and certainly in those 90 studies there are studies with null results -- those tell us something.

JUDGE CHAPPELL: Are you still in the money spent category?

MR. FIELDS: Yes. Do you want me to get off that?

JUDGE CHAPPELL: No. Just trying to follow you.

And I was wondering, do the parties agree to these categories or groupings or is that just wishful thinking on the judge's part?

MR. FIELDS: I'd like to put it somewhere in between that, Your Honor. I think the parties haven't agreed on it. These are -- we're going to present evidence that these -- that these are the categories. I don't think counsel has agreed to it.

JUDGE CHAPPELL: I'm not saying that they have to agree to your groupings, but it would be nice if the parties could agree to some categories of groupings.

MR. FIELDS: Okay.

JUDGE CHAPPELL: At some point.

MR. FIELDS: I have great respect --

JUDGE CHAPPELL: So we don't have a thousand things thrown against the wall.

MR. FIELDS: Okay. I'll do what I can.

JUDGE CHAPPELL: That's not just directed at you.

MR. FIELDS: No. I understand.

Then the next category are specific study ads, and these are pretty straightforward. They simply describe an experiment. Most of these are for POMx, like they'll say a myocardial perfusion study of so many patients showed an 18 percent improvement in the pomegranate group and a 17 percent worsening of the placebo group. It will just describe.

We have no evidence that any of those are inaccurate. And they simply say what the study did. Obviously they don't set out the whole study, but the whole study is set out online and can be found there.

The government has attacked a comparative handful, and it's more than a handful, but a bunch of studies that first were in the complaint, and then they hit us with a bunch of additional ads that they were complaining about, but most of them are in this qualified category.

For example, in paragraph 10 of the complaint,

they take statements like that our science shows encouraging results or hopeful results for prostate health or heart health. Or here's a quote, that pomegranate juice may promote cardiovascular health, may promote cardiovascular health. Or here's another one that they attack: Pomegranate juice may help counteract factors leading to arterial plaque buildup, may help counteract factors leading to arterial -- now, every one of those is backed by science. But even aside from that, complaint counsel -- and they're just doing their job, but they're -- they allege that those things that I read to you say that or imply that we prevent or cure a disease.

Now, may promote cardiovascular health? That says we prevent heart attacks? I don't think so.

We may help counteract factors leading to arterial plaque buildup? That sure as heck doesn't say we're going to prevent heart attacks. It says we may help counteract factors which lead to arterial plaque buildup.

Encouraging results, hopeful results, those don't say we're curing things, they don't say we're preventing things, and yet counsel is reading those things in.

Now, let me talk about the ads that do raise a

controversy.

I'm getting to the end, Your Honor.

In 1904 (sic) and 1905 (sic), six or seven years ago -- it's been stopped -- there was a "Cheat death" ad. It had a text that said --

JUDGE CHAPPELL: That's the one with the hangman's noose?

MR. FIELDS: Yeah, the hangman's noose. But we've got a lot of ads with a hangman's noose. This was unique in the sense that it had the text that was controversial. That text was stopped in 2005. It didn't run after that.

But in 2004 and 2005 -- and I can't give you the month -- six, seven years ago, it had a text that said that pomegranate juice may help prevent various diseases. It didn't even then say it prevented them. It said it may help prevent them, the kind of thing that the Department of Agriculture puts out on a monthly basis, may help prevent.

JUDGE CHAPPELL: Are you quoting that? It said "various diseases" or did it list actual diseases?

MR. FIELDS: No, not this disease.

You mean what did we say in the "Cheat death" ad?

JUDGE CHAPPELL: Yes.

MR. FIELDS: I don't have the whole list, but it included diseases that we felt we didn't have adequate science on.

JUDGE CHAPPELL: But my point is, it didn't say "may help prevent various diseases."

MR. FIELDS: No. It said -- it listed the diseases that it may help prevent, and I can't recall what they -- but they -- admittedly, with at least one of those diseases that it may help prevent, the science was not as rigorous as we would want it to be, and we stopped the ad.

Now, we believe it does help -- notably, it listed Alzheimer's. Now, we believe it stops -- not stops but can help prevent Alzheimer's, didn't want to advertise it because the science wasn't as rigorous as it might have been, so we stopped the ad in 19 -- pardon me -- in 2004 -- no -- 2005. After that, there were "Cheat death" ads, but it didn't say that anymore.

And even then it was "may help prevent." And by golly, if it were put to the test today to say whether it may help prevent Alzheimer's, we think we could show it. But Mr. Resnick always resisted putting something in an ad that he didn't feel was backed by unequivocal science, and Alzheimer's fell in that category, so we stopped that ad.

And since we are talking about an injunction here, not damages, an order from this court not to do things in the future, the issue I take it is whether there's likelihood that something will be done in the future, not to get you for what you did in the past. Are we likely to do something? Well, we haven't done that particular thing for six or seven years because it referred to Alzheimer's, and we haven't even said "this may prevent" kind of language, although we absolutely believe it may prevent.

Anyway, that's the "Cheat death" ad.

Now, also, the whole heading "Cheat death" with the bottle and a noose around it, that was part of a bunch of humorous headlines -- some people didn't think that one was so humorous, but -- "Amaze your cardiologist"; "Outlive your 401(k)." Clearly hyperbole, humor, puffery, whatever you want to call it, not meant to be taken literally as you're going to really outlive your 401(k).

I am not saying that when those headings preceded definite statements that the definite statements are not subject to criticism. I think they're fine, but I'm not saying that they are relieved by what's in the heading and the picture. But the heading and the picture itself is not -- wouldn't be

taken literally by anybody. I don't think any reasonable person would think that you're really saying, if you drink pomegranate juice, you'll outlive your 401(k), whatever that may mean. And there are a bunch of those that Your Honor has seen.

So putting aside those headings and putting aside the original "Cheat death" text, not the text that followed the "Cheat death" ad, moving on -- and I should stop here and say that there is evidence and there will be evidence that the profile of the POM buyer -- and this comes up in a lot of cases about -- you know, like Lanham Act cases -- the profile of the POM buyer is a generally well-educated person, reasonably well off, relatively knowledgeable about health products, not the kind of person who is going to take it literally when you say "Outlive your 401(k)," not the kind of person who would think that when you say "We have encouraging results" we mean we can cure cancer, not the kind of person who would think that when you say "We can reduce the factors that cause plaque buildup" that we're saying we can prevent a heart attack, you won't get a heart attack if you drink pomegranate juice. These people who are the profile and buyers of POM are not going to think things like that, even if some outlier might think it, but no

reasonable person is going to think it.

Now, next you have a blood pressure ad early on based on Aviram's --

JUDGE CHAPPELL: I think I might have just heard you make the argument that all POM buyers are reasonable people?

MR. FIELDS: I didn't say all. I said the profile. I'm sure there's a guy out there who's a maniac who buys POM, but he's not our profile group.

The profile group are generally well-educated people, reasonably well off, pretty knowledgeable about health products and interested in health. That's true. But they're not going to say and think that these ads about promoting health, about reasonable results, about encouraging results, that these are telling them that they can't get a heart attack if they drink POM. And no reasonable person is going to think that. That maniac that I referred to could, but that's -- I can't account for maniacs.

JUDGE CHAPPELL: So that outlier is now a maniac?

MR. FIELDS: I absolutely said he was a maniac, Your Honor. I think I was pretty clear on that.

JUDGE CHAPPELL: But those people are let inside the store?

MR. FIELDS: They don't let them in some stores, but they're sometimes inside stores.

Then we get to the -- oh, I already started talking about the blood pressure ad. That was based upon Dr. Aviram. It wasn't a blood pressure study specifically, but it found that blood pressure was reduced. And they advertised that early on and stopped because subsequent studies didn't. They didn't show it doesn't lower blood pressure; they just didn't prove it does. And again, a null result is not a negative result, but it doesn't matter. They wanted to stop the blood pressure ads, and they did, so those aren't running. We'll be talking about that in a moment.

Now, there's a "Decompress" ad. Remember the bottle with the blood pressure cuff around it? And that ran, and it was stopped about three years ago. And what they meant by that was not that we reduce blood pressure because if you -- the text that goes with the ad is clearly not about blood pressure, doesn't have anything to do with blood pressure, so if you read the text, it's saying that.

Now, complaint counsel says, Well, people will think it's about blood pressure. Well, we found in a study -- a year after the ad was stopped, there was a study, because we will have evidence that the ad was

stopped in May of '08, and a year after the ad was stopped there was a survey. We don't agree with the survey, but the people just saw the picture of the bottle with the decompressed cuff -- by the way, which was meant to say relax, the way that a blood pressure cuff goes down, ch-ch-ch-ch-ch-ch, goes down, relax.

But in this survey, a small percentage of people -- well, we disagree about the percentage, and we can get into that if we have to later on -- but that some minority of the people who saw just the picture without the text -- because if they read the text, they had to know it was not about blood pressure -- just the picture thought it was about blood pressure. Okay. It was stopped. It was stopped a year before that survey. Complaint counsel suggested that we continued to run it after we saw the survey. We didn't. We stopped it not because of the survey but a year -- it's been out for three years. And there is no more ad that talks about blood pressure. That hasn't happened since, well, six -- five or six years.

So you're talking about a -- really a -- oh, I should say complaint counsel has also disagreed with the ad -- the specific study ad that said a 30 percent reduction in plaque by Dr. Aviram and then told how many people were in the study. And that was all truthful.

Complaint counsel says, Well, but you already had Dr. Davidson's study which had a lower percentage for his high-risk group and how could you say 30 percent when he got a much lower number.

And I've already talked about that. They're measuring different things. Dr. Davidson is not measuring people with significant plaque and how much plaque is reduced. He's measuring an artery wall reduction of people who have no significant plaque and who don't have stenosis. Dr. Aviram is measuring people with so much plaque, they actually have stenosis. Their arteries are threatening to close.

So they're not talking about the same thing, and it's not inconsistent then to say there's a 30 percent reduction in plaque tells people with a lot of plaque they can get a benefit here. They're not saying if you don't have plaque that you're going to get a benefit.

So I -- well, I won't go on about that.

There is an Internet -- this is just a flat-out mistake. We stopped talking about blood pressure in the ads very early on, not because we don't believe it lowers blood pressure, we do, but because there wasn't unequivocal evidence of it anymore. And they were supposed to take it off of the Internet.

The Internet lists every study. In all of these studies, it's got thousands and thousands of lines in it. And they left in some of the lines about blood pressure even though they were instructed to take it out. And they found it as a result of complaint counsel's efforts, and they put it up on the screen, said, Oh, good Lord, it's still in there, took it out. It's an inadvertent mistake, and it's certainly not the kind of thing that is going to or could possibly indicate that we're about to falsely advertise because they made a mistake and left on these thousands of lines of Internet a few lines about the studies on blood pressure.

The science, like any science, may not be perfect. It may be criticized. You cannot throw it out. You'll hear doctor after doctor, distinguished men in their field who are staking their reputation on this. They're getting up here and testifying under oath to something.

And it all boils down really to that basic decision. If you balance your risk of any harm with this information going to the public against the potential benefit, and we think the potential benefit is thoroughly established and the risk of harm is nil, you come out with this information should not be

suppressed, and that's what we'll be asking Your Honor to do.

Thank you.

JUDGE CHAPPELL: Thank you, Mr. Fields.

I'm hearing a lot about ads that may not have run for years, and I'm wondering, hopefully there have been some settlement discussions in this case?

I see a lot of blank faces out there.

MS. HIPPSLEY: There were extensive settlement discussions before the complaint was issued, and they went to no end obviously.

MR. GRAUBERT: That's correct.

JUDGE CHAPPELL: I would encourage the parties to perhaps get together, and we're into respondent's case now, and perhaps you can get together and stipulate to take some items that were disputed out of the disputed area by the time we're finished. At least work on it.

MR. GRAUBERT: We'll see what we can do.

MR. FIELDS: Thank you, Your Honor.

JUDGE CHAPPELL: Am I seeing a head nod from the complaint counsel here?

MS. HIPPSLEY: For working on disputed areas? We'll try to work out some stipulations. We basically ran out of time before we got into the hearing phase, so

we can try to work on that when we're completed.

JUDGE CHAPPELL: All right. Thank you.

Next?

MR. FIELDS: Our first witness?

JUDGE CHAPPELL: Yes.

MR. FIELDS: I will call or recall I guess Mr. Resnick.

- - - - -

Whereupon --

STEWART A. RESNICK

a witness, called for examination, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. FIELDS:

Q. Good morning, Mr. Resnick.

A. Good morning.

Q. I'm not going to make you repeat everything you talked about last time you were here.

Let's begin with, how did you get in the pomegranate business?

A. Well, in the late '80s we purchased from Signal Oil Company a large farming operation. And primarily we were buying it for the nut business, which was a business we were in at that time. And along with that, there was some empty ground and a very small

amount of planted pomegranates. I think it was something like either sixty or a hundred acres. And at that time we probably had, you know, over 10,000 acres of nuts, so we didn't buy it for that, but we -- we had it, and it came with the package.

And I remember that we even thought of what we call pulling it and planting something else because it was a business we weren't in. And the farming people came to me and said, Look, we can farm it and let someone else process it, and we think we're making good money on it, so let's just keep it.

And basically, as time went on, we followed -- and we just sold fresh pomegranates and we did reasonably well, so I think about four or five years later I went back to the farming people and said, Let's plant some more so at least we have, you know, more of an interest in it. And they were a little nervous about it. But after I insisted, we planted some more acreage, and that's how we got started in the business.

Q. Now, how did you come to explore the scientific benefits of pomegranates and pomegranate juice?

A. Well, I think a number of things happened as I reflect back.

I've always been very interested in nutrition as a way to prevent -- or to stay healthier.

I have a family history of heart problems. My father died at sixty-one from a stroke, had a serious heart attack in his forties. My sister had a heart attack in her fifties.

And so I've always been worried about cardiovascular disease.

And also, as you said earlier, I'm a survivor of three cancers, not just prostate cancer, breast cancer and kidney cancer.

So my belief is, you know, you're sort of stuck with your parents, but you can -- the little you can do about it is to exercise and eat properly, so I've always been very interested in nutrition.

And early on, our -- we had an aggressive wellness program, oh, for thirty years in our companies. And the fellow that head it up was a doctor by the name of Dr. Dornfeld, who was our family doctor but also was a professor at UCLA, had a very, very strong belief in the role of nutrition, and so he -- as we started getting involved with the pomegranate business and selling fresh, one of our -- one of the -- we have two key people in the farming business. One is the chief operating officer, and he's very conservative, and he was worried that we would create so many fresh pomegranates, the price would go down and we would lose

money, so he on his own decided to figure out how to make pomegranate juice so that at least we could sell a by-product.

So he came up with the juice. At the same time we were expanding, and we thought -- and I don't know who came up with this idea. A lot of people take credit for it because it was successful. But we decided, well, let's look into the health benefits because we've heard all about -- at that time also -- we heard about the mythology about pomegranates goes back 5,000 years to its health benefits. And my understanding is one of the first -- in the 1500s, the first articles that were written about what we might call modern medicine talked extensively about the health benefits of pomegranates.

Also at that time the -- I guess it was called the Bordeaux paradox came out about the benefits of wine and the Mediterranean diet. And Dr. Dornfeld was very, very knowledgeable about that because he happened to marry an Italian woman who was very involved in Italy and so was a strong believer in this Mediterranean diet.

So antioxidants were becoming an area that people understood and the benefits of them, and he felt that dark-colored fruits had more antioxidants and said

that we should take a look at the antioxidant properties of pomegranate juice because he felt it was similar to wine.

JUDGE CHAPPELL: Mr. Resnick, you can lean back in the chair. As long as you speak toward the mike, you don't need to lean up. That should be more comfortable.

THE WITNESS: Okay.

Now I forgot the question.

BY MR. FIELDS:

Q. How did you select the studies that you were going to sponsor?

A. Well, we started with -- Dr. Dornfeld said, Look, the first thing we should look at is the benefits of antioxidants, so we looked -- or we said, Well, okay, who's the scientist that's done the most work in this?

And it so happened, again coincidentally, Dr. Aviram, who had done the science for the Bordeaux Institute, happened to be on a sabbatical in the U.S. We felt he was the expert in this area, and so we should contact him.

We contacted him, but at first he wasn't very interested in it because he felt that wine was the answer. But we convinced him to do it. And after he

started, he got very, very enthused because he found that this in fact was much, much more beneficial than even wine.

So that's how we started in this area.

Q. Well, then how did you select the particular studies you were going to do?

A. Well, we then looked back at both the mythology where people talked about in different cultures about what pomegranates were beneficial, and we also looked at the benefits of antioxidants and felt that the areas that we would be looking at would be cardiovascular and potentially cancer. And that's the way we started in those two areas.

Q. Now, beyond Dr. Dornfeld, did you bring in other scientists to help you make these decisions?

A. Right. On all of these areas we tried to find those scientists that were the best known in the field. And Dr. Dornfeld had done a lot of research. And Dr. Aviram was known even at those times as an outstanding researcher. And they knew the best researchers in the area, so whenever we went into a particular area to look at, we tried to find those researchers who were absolutely the best in the field, because we wanted to have credibility about our research.

Q. Now, when Dr. Dornfeld died, I think you told us last time, did you bring in other medical advisers to help you make these decisions?

A. Yes. When Dr. Dornfeld died, he recommended Dr. Liker, who was at UCLA at the time I believe, and he became both our family physician, replaced Dr. Dornfeld as our wellness doctor, and also became the head of science for our pomegranates -- or the medical science for our pomegranates.

Q. And do you have meetings of doctors in various specialized fields that help you make these decisions?

A. Yes. As we've -- you know, we've been doing this research now for eight or nine years, so obviously we started -- research you start -- I mean, our view was we wanted to find out what this product or fruit did, and so we started out in many directions and then got focused. As we got more focused, we did more research in particular areas.

When we did more research in particular areas, we had a number of people involved in those areas, and we would bring the specific people together to go over research that we've done and look at additional research that might be valuable in that particular area. And then about once every 18 months to two years we brought all the scientists together to have a summit where

everybody would go over their research to look at if their results might affect some other thinking and how it might affect health in other areas.

So we've had these meetings. And then we have a panel of advisers, including David Kessler, who was the head of the FDA, to make sure -- you know, also who was a -- knows all the very -- you know, the good researchers, and he's on our board to help us look at results and to -- how we look further into finding the best doctors in these particular areas.

Q. All right. And do you know the phrase "game the system"?

A. Well, I can imagine what it means, yes. Yes, I know the phrase.

Q. Did you attempt to select studies that you thought would produce a positive result?

A. No.

In fact, we had somewhat of a difficult time with all our doctors in the beginning because they would come to us and say, Well, what is the end result you want? And we would say, All we want is the truth. All we want to know is what this does. We're not looking -- we don't have any predetermined idea. We believe in a lot of the mythology, but we want to see if we can prove that it's correct.

And so we never tried to game the system. In fact, we were very careful because we're in these businesses for a long term. We're in the farming business, and we've been in it for almost thirty years now. If you plant a tree, you spend money for seven years, and you don't get that money back for like twenty years, so if you look long-term, we didn't want to make any -- we were very careful about any claims we made because we didn't want to come back and in any way make anything that wasn't absolutely true.

Q. Now, there was testimony that your studies -- there were some 90 studies, and they were at 44 different institutions in the United States, but a number of them -- I think it was something like 20 percent, but I can't remember the percentage -- were at UCLA medical school.

Why is that?

A. Well, UCLA medical school is convenient. First of all, it's the most -- it's -- it's an outstanding medical school, certainly one of the finest in the country. And it's the most convenient to us, so it's much easier to have meetings with experts, and everything being equal, we'd certainly like to take a 15-minute ride to meet with somebody than go across country to Boston or to New York, so we did it out of

convenience really.

Q. Okay. Now, is it correct you're still doing research, you've still got studies out there?

A. Yes, we do.

Q. All right. Now, if you believe that you have sufficient studies, sufficient scientific basis for your ads, why are you still doing studies?

A. The pomegranate business was one that is different than the way we view our other businesses.

I've been very fortunate to be successful in life.

And I think there's two major motivations around the pomegranate business. One is that, as I tell people, when I was washing windows and cleaning toilets to work my way through law school, I wasn't having such a good time. Okay? Both law school wasn't that much fun and cleaning toilets wasn't that much fun.

Now, as I've become --

JUDGE CHAPPELL: Which was worse?

THE WITNESS: You know, I think it's about a toss-up. At least the benefit of cleaning toilets is, when you're done, at least it's done. When you go to law school, you're never done, because somebody is always working harder.

So -- and also I felt that it's -- you know, had

my own personal benefits in mind, you know, what does it do.

So this to me was an opportunity to go from success to significance, to do something and probably do well by doing good, and so we looked at this as much as a help to society because we wanted to make this -- well, two things. We wanted to make a breakthrough. We really believed and still believe and believe even more that pomegranates are a very special fruit. All fruits and vegetables are good for you, I mean, and basically the government tells you that, but some are better than others and some have some specific benefits.

And part of my belief is that the focus on nutrition to the average person is what you shouldn't eat. There's not enough focus on what you should eat, and so that's why we've done research to really show the benefits of a particular product.

BY MR. FIELDS:

Q. But you're still out doing research even though you think and believe firmly that your present advertising is supported by the research you've already done, so --

A. Right. But it never goes far enough.

I mean, basically an example on the prostate

side of what's of interest to me particularly is that we've had some, what has been told by every urologist I talk with, amazing results particularly because we've seen in a substantial number of patients the PSA actually go down. They say that's virtually unheard of. Okay? That's all I can tell you, is I keep on asking and they keep on telling me the same answer.

So what we thought, that by expanding the research to more people, we might find that prostate cancer is not one disease -- they just discovered that -- that it may have particular results for particular groups, so we felt that we could even discern further where it could be most helpful for those people that it could be most helpful for.

So we believe in continuing to do this research to even -- even differentiate further where it can do the most good.

Q. Okay. Now, there's been testimony that to do a study of people who are healthy and to see whether they're going to get prostate cancer in the future or whether that can be inhibited by pomegranate juice or slowed you'd have to have a 30-year study. There's been evidence to that.

Why have you not gone into a third year -- a 30-year RCT study as opposed to these doubling time

studies?

A. Well, let me say that even though I take pomegranate every day, I'm not sure I'm going to live to 105, so for me -- or 104 now -- for me to worry about a 30-year study, number one, it doesn't make any sense because we believe that the benefit is now.

And two, it would cost a huge amount of money, so it doesn't make any sense. We don't have any harm. And in a certain sense, these studies have been going on for, you know, three, four thousand years and has come down as being beneficial, so we don't think that that's applicable to us, nor is it something that makes any sense from a standpoint of expense. We've already spent well over $35 million on research, and here we're being criticized by the FTC. It makes no sense to me. I mean, in the end we'll never get a result that they're satisfied with.

Q. Okay. I hope that's not true.

Do you recall how many different diseases and physical conditions you've studied?

A. No, not how many diseases -- we certainly looked in a lot of areas. Some were basically dead ends, and some we had fairly good results, but we stopped to focus on others. But certainly we've looked at I'd say dozens.

Q. Okay. And you are running ads on three areas, heart, prostate and erectile dysfunction.

Now, why have you not run ads on these other dozens of areas in which you've done science?

A. Well, in those cases we didn't feel that we had enough information, even though we felt it was valid. And the instances where we're focusing our advertising is where we've actually gone to human studies and have peer-reviewed results in all of them.

So there's other areas. You talked about -- it's just interesting you were bringing up cognitive results or Alzheimer's disease. And we've continued those studies and have now done studies on humans and have found again that the original results have been validated and even have gone further, but we're still not making claims to that because we're still adding to the amount of information we have.

So we want to be -- I mean, my view is that we want to be absolutely comfortable with what we say and make sure that we have no conflicts amongst ourselves, and that's -- and I feel that in the end there's no absolute objective test. We feel that we certainly have passed any subjective tests.

Q. Okay. Is it true that your competitors have advertised many, many more areas in which pomegranate

juice provides a benefit?

A. Certain -- yes.

Q. I know you've seen and can we put up on the screen this advertisement with -- from one of your competitors with 17 different benefits from pomegranate juice.

A. Yeah.

Q. Have you had the opportunity to look that over?

A. I have.

Q. Yeah.

And you are advertising about three of those 17 benefits; is that correct?

A. Correct.

Q. Heart, prostate and erectile dysfunction.

A. Yes.

Q. And are there some of those other benefits that you believe are really benefits?

A. Yes.

Q. And why are you not advertising all the other 14?

A. Because we don't feel it meets our test of adequate scientific information.

Q. Okay. Do you recall somebody suggesting to you that a great slogan would be to say that this was a miracle cure?

A. Yes.

Q. And what was your response?

A. That we shouldn't do that because it's -- that's not -- I mean, we don't have proof that it's a miracle cure.

Q. Okay. Is POM making or losing money?

A. It's both not making profits and using quite a bit of cash, so it's losing money on both.

Q. Now, if you're losing money on this, why do you stay in business?

A. Well, we think eventually our idea is to make money, but we've invested a great deal in making sure that what we're doing is we're doing it right and we're making sure that the product we make is what we -- both what we say it is and it does what we say it does, so in the manufacturing, that makes it much more expensive.

Q. All right. Now, you testified before that you are -- you have an interest in possibly applying to the FDA for a drug permit.

Is that to differentiate your product from your competitors?

A. Yes. One of the reasons we found that we're having problems with our competitors is twofold.

Number one, people are selling pomegranate juice

that is in fact not pomegranate juice, it's something else, and we're trying to eliminate that.

And secondly, people are selling products which they know that the public thinks is primarily pomegranate juice because it's labeled and has pictures of pomegranates and it's called like pomegranate blueberry juice or pomegranate cranberry juice, and basically in those cases there's anywhere from a half to 2 percent of pomegranate in it.

So people are buying that product at a much, much cheaper price because it's 99.6 percent apple or pear juice. And we're selling either a hundred percent pomegranate juice, or if we have a pomegranate blueberry or pomegranate orange, basically they're both -- the only ingredients are pomegranate and whatever else we say is in it, so it's much more expensive to produce.

So we believe that if we get an FDA drug approval that it will differentiate our product, and then people are therefore getting the product and getting the result that they think they're going to get because then we can make a difference between just what people are thinking is pomegranate in general and our specific product of pomegranate where we've done all the research.

Q. Got it. All right.

What is your basic function with reference to the POM business?

A. Actually I think I'm the CEO, which means chief executive officer.

Q. Right.

A. But I act -- I think I act somewhere between that but more like a chairman.

Q. Are you mostly in the agricultural and financial end of it?

A. Yes. I'm in the -- both I oversee -- the major function I perform in the business on a day -- not a day-to-day but a relative day-to-day basis is to oversee the farming operation and the marketing of the nuts. But in the pomegranate business I focus on the strategy and I focus on the budgets, but not the day-to-day.

Q. Do you get involved in the marketing of POM?

A. Not too much. Basically my wife handles that, and we find that the less we have conflict at work, the less we have a conflict at home.

Q. I gather that she is now less involved in the business than she was?

A. Yes. She's trying to get less involved.

Q. Okay. Now, do people come to you regularly to

approve ads?

A. No.

Q. Do you typically see the ads before they go out?

A. No.

Q. All right. Who has the ultimate ability, as you understand it, to decide which ads should go and not go?

A. Well, in a sense, I have that responsibility, but I've delegated that.

Q. And you delegated that to Mr. Tupper?

A. Well, Mr. Tupper and also that we have our legal department set the standards for what we -- what the ads should look like.

Q. I'm sorry.

Does Mr. Tupper have any authority in the business other than authority you delegate to him?

A. No.

Q. Do you intend POM as a substitute for recommended medical treatment?

A. No.

Q. Or anything recommended by a doctor?

A. No.

Q. Are you aware of anyone associated with your company suggesting that someone should drink POM instead

of following their doctor's advice?

A. No.

Q. All right. What would you do if you found out that somebody in your company was making that kind of suggestion, don't listen to your doctor, drink POM instead?

A. Number one, we'd fire them.

And number two, if that information got out in any other way, we would make it clear that that was not correct, that we should -- someone had no authority nor should have ever said that, and that's not our position in any way, shape, or form.

MR. FIELDS: Okay. That's all I have of this witness, Your Honor.

JUDGE CHAPPELL: Is there cross?

MS. HIPPSLEY: Just a couple of questions, like five minutes.

JUDGE CHAPPELL: Go ahead. Then we'll break after that.

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CROSS-EXAMINATION

BY MS. HIPPSLEY:

Q. Good morning, Mr. Resnick.

A. Good morning.

Q. I just wanted to clarify Dr. Kessler's

interaction with POM Wonderful. I believe you stated he's on a board.

What type of board, if any, is he on?

A. Let me say when I say "a board," we don't have -- being a private company, we don't have a lot of things that we consider like official.

I think he's more of a consultant to us in the sense of looking at how pomegranate works and where we might go with the research and also in the sense of evaluating the research with us and talking about, again, if we do more, who are the best people to go to.

Q. Okay. And is he a paid consultant, do you know?

A. Yes.

Q. All right. And -- no further questions.

MR. FIELDS: No redirect, Your Honor.

JUDGE CHAPPELL: Thank you.

Thank you, sir. You're excused.

We'll reconvene at 11:40.

(Recess)

JUDGE CHAPPELL: Back on the record Docket 9344.

Next witness.

MS. DIAZ: Respondents call Dr. Harley Liker.

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Whereupon --

HARLEY LIKER, M.D.

a witness, called for examination, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. DIAZ:

Q. Dr. Liker, you are a medical doctor; correct, and practicing physician?

A. That is correct.

Q. Where are you licensed?

A. State of California.

Q. And your field is internal medicine?

A. Correct. I'm a board-certified internist.

Q. Are you a member of the faculty at UCLA medical school?

A. Yes. I've been on the faculty at UCLA since 1995 and was recently promoted to associate clinical professor of medicine.

Q. When did that occur?

A. I think it was retroactive to July of 2010 just because the academic promotion process takes some time, but I think they notified me in January of this year.

Q. What percentage of your time is spent with patients?

A. I would say I spend about 75 to 80 percent of my

time in direct patient care.

The remainder of my time is spent consulting for POM.

Additionally, I teach at the medical school, primarily teaching physical diagnosis to the second-year medical students.

I also serve as the chairman of the UCLA utilization medical group's review board that oversees the management of about 45,000 managed care patients.

Q. What does that group do more specifically?

A. So UCLA has a contract with a number of different health plans, Health Net, PacifiCare and Blue Cross among them, where the responsibility for overseeing how the 45,000 or so patients that are managed by the UCLA Medical Group is actually delegated from the health plan to the medical group, and I serve as the chairman of the committee that oversees that process.

Q. You've also done considerable scientific research and coauthored papers in published peer-reviewed journals yourself; correct?

A. That's correct, yeah. I started doing biomedical research probably as a high school student and have been involved in some level of research probably for over thirty years and have been a coauthor

on numerous publications.

Q. You also serve on scientific advisory boards for various companies over the years?

A. Correct. Yeah.

I have served on a global advisory board for AstraZeneca for their Nexium product. This is a product used to treat heartburn and reflux.

I've advised Reliant Pharmaceuticals also on the same area of reflux, a company called Exact Sciences which developed a stool-based DNA test to screen for colon cancer, as well as a pharmaceutical upstart called Vela Pharmaceuticals, to name a few.

Q. What do you do on these boards? What's your function?

A. So typically on these boards the leadership at the company will bring in their scientific advisers or their experts to help them interpret data that has been gathered since the last time the board may have met, looking for the board's interpretation of the data, number one, and, number two, to help guide the company in designing future studies, specifically asking questions about which patient population one would want to study, too, how to set the study up, numbers of sites.

Oftentimes there's a lot of focus on the

particular endpoints in a study that one may want to look at. But in general, it's really looking at the data that has come in since the board has last met and guiding the company as to future directions to take, specifically with respect to design of future studies.

Q. Okay. So you're giving input on -- in some form on the design of the protocols, for example?

A. Correct. When I say "studies," it's basically a protocol that is developed to execute a study, so yes, it is the protocols.

Q. And you have done biomedical research yourself.

A. Correct.

Q. You are not employed by POM Wonderful or any Roll entities, are you?

A. No. I've never been employed by POM or any of the Roll entities. I've always remained independent and have been paid as a consultant.

Q. So what is your relationship with POM and/or the Resnicks?

A. I think as Mr. Resnick previously testified, I became the Resnicks' personal physician, actually was initially introduced to the Resnicks sometime in I think it was mid to late 2000 and at the beginning of 2001 I think formally became their physician as well as the wellness coordinator and wellness director for the

company and in 2001 became what we call the medical director for Roll International as well as POM Wonderful.

And I should just explain that "medical director" is kind of a term of art. I'm not an officer of the company. I'm not a director in the legal sense. But when someone like me helps to oversee a scientific program at a company, the natural title that is traditionally given is medical director.

Q. Okay. When did you become medical director of POM, what year? Do you recall?

A. Again, I think I first started working with POM in about 2001. Dr. Dornfeld, who Mr. Resnick had testified about earlier this morning, unfortunately had some health issues related to his wife and then subsequently had some personal health issues that required that he move from Los Angeles to New York, where his wife was getting treatment for her cancer. And at that point Mr. Resnick asked me if I would come on on a part-time basis, as a part-time consultant. But I think as of 2002 it was pretty clear that Mr. -- excuse me -- that Dr. Dornfeld was no longer going to be able to serve in his capacity as medical director, and I think as of 2002 I became the official medical director.

Q. Okay. So what's your role as medical director? What do you -- what's your function?

A. Well, there are really kind of two suites of things that I do. One is really functioning as a medical doctor where I provide medical care to the Resnicks directly, many members of their family, as well as senior employees in the company, but also serve as a resource for rank-and-file employees that come up with any medical issue from, you know, a neurologic issue that's not being solved easily. Someone may be involved in a motor vehicle accident and they get stuck in an intensive care unit up in the San Joaquin Valley, and I can get called in to make sure that they're receiving the appropriate medical care.

On the research side, as medical director, the primary focus really has been on POM where there has been the majority of the medical research that has gone on. And in that role, the job has really been pretty simple, and that is to make sure that we're getting good science done by the top people in the most rigorous manner.

Q. So how do you go about doing that; that is, in connection with your involvement in the research program, how do you go about making sure that rigorous research is accomplished? What do you do?

A. Yeah. So let me give you an example.

Let's take the field of atherosclerosis. I think as you know and has been previously testified to earlier this morning in this courtroom, atherosclerosis and heart disease has been a particular area of interest to the company.

And as Mr. Resnick said, Dr. Aviram, who was identified by my predecessor, Dr. Dornfeld, is one of the leading experts in the world in the field of antioxidation because of the French paradox, and the work that he had done on red wine was an area that we wanted to investigate further.

So I -- so what I would typically do would be to look at the body of research that had been done in a particular area, so we'll take again atherosclerosis as an example.

Dr. Aviram had done some very interesting and I think groundbreaking work on the effects of pomegranates in a particular mouse model that has high levels of cholesterol. This is called an apoE knockout mouse. They develop advanced atherosclerosis. We'd seen some very encouraging results done by him, but we wanted to get some additional research done in this area.

So I went to the literature, did searches to

see who were the most published authors in the leading journals and the most reputable institutions and came up with a guy or a physician by the name -- or actually I should say a Ph.D. by the name of Dr. Michael Rosenfeld, who is at the University of Washington.

Dr. Rosenfeld, by way of example, has been doing research for over thirty years, has I think nearly a hundred publications, has had a lot of experience with this apoE knockout mouse and, in my estimation and the estimation of the team, would be an appropriate person for us to reach out to to see if he would be interested in studying the effects of pomegranate juice in the models that he was using.

Q. Okay. You referenced a team right now.

What team are you referring to?

A. So I think from about 2002 on there was -- I think the title of the person was a scientific director, who was a full-time employee of POM Wonderful, so that person and myself. And on occasion I'd meet with Matt Tupper and Stewart Resnick to talk about areas that we were interested in exploring, and I would come back to the team with recommendations regarding the qualifications as well as the experience of the individual I was recommending that we engage to investigate scientific studies with us.

Q. Okay. Now, in your experience and in sponsoring studies, did you ever see any tendency on Mr. Resnick's part to select only studies that he thought would produce a successful result?

A. No. And I think to the contrary, there were times where he was outright told that a study may not be successful, that the likelihood of success would be low -- and I think Mr. Resnick has kind of a true inquiring type of mind -- where he said, Look, Harley, whether this is going to work or it's not going to work, I just want to know whether our product or products have any benefit in this particular area, so you may tell me you think it's not going to work or the scientists may tell me that it may not work, but I want to know, so let's go ahead and do this and just find out whether or not it works or it doesn't work.

Q. So -- okay. Do you have any examples of that?

A. Yeah. There are two that come to mind.

The first is a cold and flu study. And I'm smiling when I'm looking at Mr. Resnick as I recall the study. This was a very expensive study. If I'm -- if my recollection is correct, this study was going to cost in the neighborhood of a million dollars.

And cold and flu is a very tricky thing to recruit patients for in terms of timing. You never know

when they get the cold or they get the flu or if it is the cold or it is the flu.

And I said, Stewart, you know, with all due respect, I just don't think we're going to have an easy time getting the study done, and I don't think we're going to get a good result here. And Stewart I think very respectfully said, I hear you, Harley, I understand what you're saying, but this is an area where, you know, I've been told by numerous individuals that they hadn't had a cold or they hadn't had the flu since they had been consuming pomegranate products, and I'd like to investigate it, so let's go ahead and do it.

There was another instance where a scientist said, Look, I think you need to have 200 patients in a given study to get a statistically significant result. And there was a cost associated with doing that. As you probably know, medical research is very expensive to do, especially when it comes to doing clinical trials. And the recommendation from the scientist was to have -- again, it was 150 or 200 patients in this particular study if, I'm not mistaken.

And Mr. Resnick said: Look, I'm just not willing to commit that degree or that amount of money at this stage of the game, so go ahead and do the study.

I'm interested to see whether or not we see some benefit of the pomegranate juice, and whether it reaches statistical significance or not is not what I'm primarily interested in. We're not a drug, we're not going after a drug claim, and I just want to study, say, 75 patients or 80 patients as opposed to the 150 that the scientist might have recommended.

Q. What study are you referring to?

A. I believe that was the erectile dysfunction study done by Dr. Harin Padma-Nathan.

Q. Did you have a similar dialogue with Mr. Resnick in connection with the Davidson BART study?

A. I did, yeah.

It was very interesting. The brachial artery reactivity test, also known as BART, was recommended to us originally by Dr. Dean Ornish, and we were told that it was a difficult study to do. It turns out that Dr. Ornish actually abandoned doing the brachial artery reactivity test in his study because it was literally too difficult to measure.

When we had approached Dr. Michael Davidson to do a larger cardiovascular study for us, I think Mr. Resnick recalled that the BART testing was part of the original protocol that we had put together with Dr. Ornish, and he wanted that in the protocol with

Dr. Davidson.

And Dr. Davidson came back to Mr. Resnick and said: Listen, Mr. Resnick, you know, this BART testing is very difficult to do. I don't think you're going to get a positive result here, and I'd advise against doing it. It's probably a waste of time and maybe a waste of your money.

And Stewart came back and said: You know, Dr. Davidson, I respect your opinion. I'd like to take a look at this. We're going to look at 50 patients. I'm not concerned about getting a statistically significant result or not, but I'm interested in understanding about how our product works. And if it works, it works; and if it doesn't, it doesn't. And I'm going to go ahead and do it.

Q. Dr. Liker, can you explain -- it's not an easy thing to explain -- can you explain what it is to do a power calculation for a study?

A. Sure. I'll qualify myself as being a nonqualified expert. I'm not a statistician.

But in broad, general terms, when one is designing a clinical study, you have to determine how many patients one would require to be in the study to see if you were looking for a statistically significant difference between the treatment group and the control

group, and that is really driven by the magnitude of the effect of change that one would expect to see.

So that if the difference between the control group and the treatment group was going to be 2 percent, to show that in a statistically significant fashion you may need a thousand patients in the treatment arm and a thousand patients in the placebo arm to demonstrate a 2 percent difference at a statistically significant level.

On the other hand, if there was going to be a 20 percent difference or a 30 percent difference, something that would be easily discernible between the treatment group and the placebo group, the number of patients that one would require in those arms or in that study would be much smaller.

Q. Okay. So let's get this straight. To see a statistically significant benefit and a -- from a test that is expected to produce fairly dramatic results, you need less people in that study in order to demonstrate that benefit in a statistically significant manner.

A. That is correct.

Q. Okay. Who does that analysis typically, and when is it done?

A. Yeah. So that will typically be done by the

principal investigator often with the assistance of a statistician who has expertise in doing this.

Q. Okay. Did Mr. Resnick adhere to the advice of scientists -- or always adhere to the advice of scientists regarding the desired number of patients to include in a study to achieve a statistically significant benefit?

A. No.

I think as I've just testified to, in the Padma-Nathan study, Dr. Padma-Nathan had suggested that we use a larger number of patients in the study in an effort to achieve -- to increase the likelihood of seeing a statistically significant benefit.

Similarly, with the BART study, you know, Dr. Davidson probably said, Don't do it at all, and if you're going to do it, you may even need to use larger numbers of patients because 50 is probably too small to show a statistically significant difference between the treatment and the placebo groups.

Q. So why doesn't he sometimes adhere to these recommendations on the number of patients to include in a study or in connection with a study design?

A. You know, I think there really are two drivers here.

From a very practical standpoint, there's a cost

associated with having more and more and more patients in a study. You know, we recently did a study that was going to cost $10,000 a patient, so the difference between having 50 patients in the study and 200 patients in the study would be the difference between doing a half-a-million-dollar study and a $2 million study, and there were times where Mr. Resnick just wasn't prepared to make a financial commitment of several million dollars on an initial study.

Q. Okay.

A. And I think the other part of the story is that our goal at POM was just to understand how the products were working and if they were working, both from the basic science standpoint and in test tubes, in animals and in clinical studies. And the goal wasn't to get drug approval, so we weren't saying okay, we need to design every single study so that we absolutely are certain that we'll get a statistically significant effect.

Q. Okay. Is it correct that the Resnicks have now sponsored in the neighborhood of about a hundred studies on POM products?

A. Yes. I think it's over a hundred studies at this point.

Q. And at 44 different institutions, approximately

44 institutions?

A. That is correct, 44 different institutions.

Q. And that includes Johns Hopkins, M.D. Anderson in Houston, the Mayo Clinic?

A. Cleveland Clinic. UC San Francisco. We've worked with investigators in England, in -- literally with some of the best scientists throughout the world.

Q. Okay. And about 70 of these studies have been published in peer-reviewed journals?

A. Yeah. I think at this point it's north of 70.

Q. Okay. And it's true that some number of the studies have been conducted at UCLA or have involved UCLA-affiliated doctors.

Can you tell me how that happened, in your view?

A. Yeah. I think, one, as Mr. Resnick previously testified to this morning, there's a certain proximity between UCLA and where POM Wonderful is located. It's literally a ten-minute drive.

But above and beyond that, UCLA's hospital is typically ranked as the number one hospital in the western United States by U.S. News and World Report. I think that's over twenty years running now. It's typically ranked as one of the top five hospitals in the country.

In terms of the medical school, it's one of the leading medical schools in the country. They receive -- again, I don't know the exact number, but I'm sure they're in the top 10 or 15 in terms of NIH research dollars that are received. If my recollection is correct, they've had five Nobel laureates that have come out of UCLA, so this is considered to be one of the leading medical institutions in the country if not in the world.

Q. So how else does Mr. Resnick use scientists in connection with the medical research program?

A. So I would say there are really kind of three different groups of scientists or bodies kind of that come together to provide Mr. Resnick with advice.

I would describe the first group as kind of an internal group that has been comprised of myself, the scientific director, which has been either Risa Schulman or Mark Dreher, Brad Gillespie. David Heber has been involved in those internal groups. David Kessler has been involved in those internal groups. And those would be meetings where the scientific advisers and Mr. Resnick and typically Mr. Tupper would come together to discuss research results and look at future plans for additional research studies.

The second group would be the group of

physicians that were doing or the scientists that were doing research for us or with us. And about every 18 months or so we would pull together all of them at a research summit where for a full day each of the scientists would spend 15 or 20 minutes presenting the work that he or her -- he or she had done since we had last met, helping us interpret the results that they had come to. And I think one of the things that was great about those meetings was we'd try to create a collaborative environment where people could interact across fields.

So you could have someone who was working on erectile dysfunction say, Hey, I've studied this and I think this may apply to something you're doing in the way of cardiovascular health, so there would be a lot of what I would describe as kind of cross-pollination where there could be a great exchange of ideas.

Q. If I can just stop you there, in connection with these research summit meetings, what's the goal of those?

A. Again, I think it really is twofold. One is to report to the group as to what has been accomplished since the group last met, so basically the results of their efforts, and, number two, discussions about future directions that individual scientists may want to go

into and, again, done in a very collaborative and open environment.

Q. Okay. And are there other categories of teams that --

A. Sure.

Q. -- Mr. Resnick uses?

A. Yes.

The third group I would describe as kind of scientific advisory boards that were kind of disease or particular area of expertise focused. And the two that come to mind would be cardiovascular disease as well as prostate cancer.

Q. Okay. So let me back up just a second.

In connection with the research summits you spoke about before, who attends those research summits? Who's typically attended those historically?

A. So the leadership team from POM, so Mr. Resnick would attend, Matt Tupper would attend, I would attend, the scientific director would attend. Often people from the farming company would come down to listen and hear about the research that was going on. But most importantly it was the scientists.

So you could have an asthma expert from Vanderbilt University. You would have Lou Ignarro, who is a Nobel laureate from UCLA. David Kessler, the

former head of the FDA, would be there. David Heber would be there. Dr. Carducci from Johns Hopkins would be there.

So basically anyone that we had an active scientific research program going on with who was available to come would come.

Q. Okay. And in connection with the scientific advisory board group, I'm not sure if it's clear what the -- what the function of that scientific advisory board group is.

A. All right. So I think it's important to take a step back.

Oftentimes the people that we would ask to come to a scientific advisory board would be people that weren't actually working on research with us. They were kind of outside individuals who were seen as thought leaders in their field.

So in the area of prostate, cancer Dr. Phil Kantoff, who is affiliated with Dana Farber and the Harvard Medical School, came out to meet with us with again Dr. Kessler, Dr. Carducci from Johns Hopkins, and others to help us understand what the latest results that we had seen in our prostate cancer research program meant, number one, and, number two, to guide us as to what future directions we should take in terms of

designing additional clinical studies or basic science studies to further understand the effects that the pomegranate juice or the extract was having on the subjects we were studying or in the models that we were using.

Q. So why -- I'm sorry.

A. I was going to say we do the same thing in the cardiovascular arena, where, for example, Dr. P.K. Shah from Cedars-Sinai Medical Center, a world renown cardiologist, previously had been or has appeared on 60 Minutes, Dr. Gregg Fonarow, Dr. Ben Ansell, none of whom had any real attachment to the POM research program, were brought in as outside experts to give us their independent assessment of the research that had been done in the cardiovascular arena and to help us design future studies to answer the questions that we were looking at.

Q. Okay. So is that intentional? Or I should say, why is it important that you have doctors participate in a scientific advisory board that were not engaged in ongoing research for POM?

A. Yeah. I think Stewart -- you know, this -- I think the original idea actually came from Dr. Kessler. He said, You know, why don't you guys go get some independent, outside people that you're not working

with, that aren't doing any research for you to come in and give you an assessment of the work that you're doing.

And I think that was, you know, an instance where Stewart said: You know, that sounds like a great idea. And Harley, please go ahead and identify some of the top people in the country and invite them, you know, to come and spend a half a day or a day with us, make sure you send them all materials in advance so they can review everything that we've done in a rigorous fashion, and let them know that the goal of them coming here is to give us their honest assessment of what our research means and what further studies we should do to elucidate the mechanisms and the populations in which the pomegranate, whether it be the juice or the extract, may have benefit.

Q. Is it fair to say Mr. Resnick relies heavily on the advice and counsel of these various scientists and scientific advisers in connection with the conduct of POM's research program?

A. Absolutely.

Q. Okay. Complaint counsel has pointed to a delay in the publishing of Dr. Davidson's study.

That study was ultimately published; is that right?

A. Correct.

Q. And Mr. Resnick approved it being published.

A. Yes, he did.

Q. What caused the delay in the publication?

A. So publications can be delayed for a wide, broad range of reasons. But I think in particular this study was really the first time in all of our cardiovascular studies, from the very early work that Dr. Aviram had done initially in test tubes, subsequently in animal models and then finally in humans, where we didn't see a statistically significant benefit at both -- the two time points we looked at in the Davidson study was a 12-month time point and an 18-month time point.

And we saw statistically significant differences that Dr. Davidson was very excited about at the 12-month time point; however, that effect was lost at the 18-month time point. And I think Dr. Davidson as well as the kind of internal scientific team had a very hard time understanding why for the first time in at that point it had probably been a six or seven-year research program on cardiovascular disease we didn't see a continued effect at the 18-month standpoint.

Q. Okay. So there was confusion over the difference in the overall score at 12 months versus

18 months.

A. That is correct.

Q. Okay. And so specifically how did that cause a delay?

A. Well, so the first thing we did is said, hey, let's go back and reread -- we were measuring something that's very technical, very difficult to read, which is called the carotid intimal medial thickness, which is just a small section of the wall of the carotid artery. It's not an easy thing to measure. There are relatively few people around the country that have the expertise in measuring it.

So one of the first things that we asked Dr. Davidson to do was to find an independent group to actually go back and in a blinded fashion reread those images to make sure that there wasn't a problem with the actual reading of it, of those images.

Q. Okay. Just to be clear, Dr. Davidson was very excited about the study and thought it was -- and wanted to publish the study; correct?

A. No question. Dr. Davidson was extremely enthusiastic and wanted the study published.

Q. Okay. So how did Dr. Davidson resolve Mr. Resnick's or POM's concern about the difference between the data?

A. So, again, I think one of the things that Dr. Davidson had suggested was to go and try and do what's called subgroup analysis to see if for some reason there were certain individuals that were responding that had certain characteristics versus others that may not be. That was one piece of the equation.

The other piece I already mentioned was we actually went back and got the data reread at least once and possibly twice. I think the data was actually sent to France to be read. And then, if I'm not mistaken, a Dr. Howard Hodis, who is an international expert on carotid IMT at USC, also took a look at the data.

Q. It was Dr. Davidson's idea, wasn't it, to do the subgroup analysis?

A. Correct.

Q. And why did he make that recommendation?

A. Again, I think --

MS. DAVIS: Objection.

BY MS. DIAZ:

Q. What did he tell you?

JUDGE CHAPPELL: Hold on. I don't know if I heard an objection. I won't hear it if someone is not standing up, by the way.

MS. DAVIS: Oh. Objection.

JUDGE CHAPPELL: Basis?

MS. DAVIS: Hearsay. It calls for hearsay.

JUDGE CHAPPELL: Any response?

MS. DIAZ: I can rephrase the question, Your Honor.

JUDGE CHAPPELL: Go ahead.

BY MS. DIAZ:

Q. Did Dr. Davidson tell you why he wanted to do further investigation analysis and why he wanted to engage in a subgroup analysis?

A. Yes. Dr. Davidson told me he was also surprised by the fact that we saw a statistically significant result at 12 months but that we did not see that effect at 18 months. It did not make biological sense, it did not make physiological sense, and it really didn't line up with any of the other research that we had done over a period of six or seven years.

Q. At some point he finished the subgroup analysis; correct?

A. Correct.

Q. And what were the results?

A. So the results were again the outside individuals that reread the scans said no, the readings of the scans are actually correct, there is a

statistically significant difference at 12 months, but that effect is lost at 18 months. However, when Dr. Davidson went back and did the subgroup analysis, he found that the individuals that were under the highest oxidative stress, specifically those with high triglycerides and low HDL, actually did show a statistically significant benefit both at 12 months and at 18 months.

Q. And was Mr. Resnick still hesitant to have the Davidson results published, even after receiving the post hoc subgroup analysis back from Dr. Davidson?

A. Yes. I think he was still hesitant again because it was the first time where we saw something that was an aberration, and I don't think even as we sit here today that we had a clear understanding as to why we didn't see that benefit at 18 months.

Q. So -- so how was this -- how was the publication issue ultimately resolved?

A. So we had an internal meeting. If my recollection serves me, Mr. Resnick was there. Mr. Tupper was there. I can't remember if it was Mark Dreher or Brad Gillespie at the time. I was there. David Kessler had flown down from San Francisco to attend, and I believe that David Heber was there.

And Dr. Kessler made a very simple and what

seemed like a very logical suggestion, and he said: Look, guys, let's not sit around this table and try and figure out, you know, what the meaning of this is. We've racked our brains trying to sort this out. Let's give it to the peer review process. Why don't you find -- Dr. Davidson was on the phone -- why don't you find a leading journal with top-flight reviewers to take a look at the data. And if they -- submit it for publication. If they feel it's worthy of publication, then it will be published; and if is not worthy of publication, then it won't be published.

Q. Did you understand that -- from conversations with Mr. Resnick that he believed it was a positive study?

A. I think that Mr. Resnick believed it was a positive study. I'm sure he was encouraged by the 12-month data, but I think he was troubled by the 18-month data as the rest us were. And I think Mr. Resnick was very cautious about not disseminating something that wasn't clear and understandable to, you know, to the public.

Q. Even if it was positive.

A. Even if it was positive.

Q. Is there often a delay between the time of completion of a study and the publication of a study?

A. Certainly. The publication process, as any of the scientists in the room can tell you, can often be painstakingly long.

Once a data -- once a study is complete, the data actually needs to be interpreted, analyzed, written up. All of the authors actually have to approve of the manuscript. A decision has to be made as to which journal the publication should be submitted to for potential publication. The journal then has to decide -- the journal's editorial board has to determine whether or not it's an appropriate article for that particular journal.

Once they make that determination, they have to send it out to in some cases two and in other cases three reviewers, who often will come back with comments. They may say we should accept, they may say reject, or they may actually come back to the author with additional questions about how the study was conducted, and then the authors have to come back and respond or reply to the reviewers. And then, assuming those questions are answered satisfactorily, a decision could be made to go ahead and publish.

From the time that a decision is made for a journal to accept a particular article for publication, there could be a six or a twelve-month queue to

actually get into that journal before it's actually published.

Q. Do you recall what journal the Davidson study was ultimately published in?

A. I believe it was the American Journal of Cardiology, which is one of the leading journals in cardiovascular medicine.

Q. At the time, did you think that there was anything suspicious or improper in the lag time between Dr. Davidson's report and the ultimate publication of his study?

A. I did not.

Q. Is that still your view?

A. That is my view.

Q. Okay. Are there various reasons why a study may ultimately never get published?

A. Sure. You know, sometimes the results are not worthy of publication. It's just not interesting.

I mean, you know, we could study whether, you know, balloons bounce up and down and hit the ceiling here and we can write it up and try to submit it to some journal, and the journal would say we're really not interested in whether balloons hit the ceiling or not.

There are some studies that aren't even

intended for publication. They're more investigative to gain a deeper understanding of what's going on without necessarily wanting to publish it.

Q. Any other reasons that -- any other reasons specific to any experience you've had at POM about why a study might not be published?

A. I can't think of any at the moment.

Q. Okay. Have you or Mr. Resnick ever before delayed publication of a study?

A. Yeah. I can think of a couple of different occasions.

The first was the initial Aviram study that studied 19 patients with severe carotid artery stenosis. The results came back and showed a 30 percent reduction in the individuals in that study who had received the pomegranate juice.

And we were obviously very happy and very excited about the result. But Mr. Resnick is a very I think diligent, thoughtful and cautious individual, and before he was going to have that study published he wanted an independent, blinded assessment done of that data. He basically said to me, Harley, I want you to find the appropriate person to reread these images to make sure that the interpretation that we got from Dr. Aviram and his group is correct.

And in that instance I approached Dr. Hugh Gelabert, who is a professor of vascular surgery at UCLA, and he read those -- reread those images in a blinded fashion and indeed confirmed that the reading from Dr. Aviram's group was correct.

There was a second instance. And as previously testified to this morning or as mentioned in court this morning, Dr. Ornish completed a study on myocardial blood flow for us, and in that study we saw a very significant difference between the control and the treatment group in their blood flow.

And as opposed to rushing just to go out and publish the study, again Mr. Resnick came to me and said, You know, before we publish the study, I want you to identify an expert in the field of nuclear medicine, nuclear cardiology, that can reread these images for us in a blinded fashion to confirm the accuracy of this data before this data will be published.

Q. Why did Mr. Resnick want these results independently verified?

A. Again, I think he was just very conservative in making sure that we didn't transmit or relay any medical data --

MS. DAVIS: Objection, Your Honor. Speculation. Calls for speculation.

JUDGE CHAPPELL: The response says you think, sir. Let's limit it to what you know.

The objection is sustained. The answer will be disregarded.

THE WITNESS: I know, based on the fact that Mr. Resnick sat across from me at his conference table on the tenth floor and told me, Harley, I do not want this data published until we get an independent, third-party assessment of it done in a blinded fashion, and until that happens we are not publishing this paper.

MS. DIAZ: Thank you, Dr. Liker. I have no further questions.

JUDGE CHAPPELL: I have a couple questions.

The person may be yourself, but is there someone at POM who is the czar, who is the end-all, be-all, know-all of all research that's been done for pomegranate juice?

THE WITNESS: Look, I think I have a pretty good handle on all the research that's been done. As has been previously testified, we've sponsored over a hundred studies and have 73 publications, so I don't think I can answer every single question about every single detail of every study.

Brad Gillespie, who's the scientific director, I

think also has a pretty good handle on what has been done. But I don't know if there's one person who knows every detail of every single thing. It's a program that's been going on since I think 1998, if I'm not mistaken.

JUDGE CHAPPELL: But you believe that Mr. Gillespie as well as yourself would be familiar with most, if not all, of the research.

THE WITNESS: That is correct.

JUDGE CHAPPELL: Thank you.

Any cross?

MS. DAVIS: Yes, Your Honor.

JUDGE CHAPPELL: By the way, any more direct after my questions?

MS. DIAZ: None, Your Honor.

JUDGE CHAPPELL: Go ahead.

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CROSS-EXAMINATION

BY MS. DAVIS:

Q. Good afternoon, Dr. Liker.

A. Good afternoon.

Q. Dr. Liker, your role in marketing has been minimal; is that correct?

A. That is correct.

Q. And you do not review every piece of

advertising that has been disseminated by POM; is that correct?

MS. DIAZ: Objection, Your Honor. This is outside the scope of direct.

MS. DAVIS: I'm just probing his duties and responsibilities. On direct he testified about the scope of his responsibilities, and I just want to clarify the extent of his responsibilities at POM.

JUDGE CHAPPELL: I'll allow that, but if it goes beyond that, I may have to deal with the objection again.

MS. DAVIS: Okay. I just actually have one more question on that.

BY MS. DAVIS:

Q. It is not your -- well, actually I'm not sure I got an answer to my second question.

You do not review every piece of advertising disseminated by POM; is that correct?

A. Correct, I did not review every single piece of advertising disseminated by POM.

Q. And it was not your job to review -- or strike that.

It was not your job to approve every piece of advertising disseminated by POM; is that right?

MS. DIAZ: Objection, Your Honor. Your Honor,

assumes facts not in evidence. And it's also again beyond the scope. She's actually assuming that there is in her questions, that he did review advertising. That's why the question I believe is improper.

MS. DAVIS: Again, I'm just asking -- I'm just trying to clarify the scope of his responsibilities as medical director for POM. This is actually my last question on this particular issue.

JUDGE CHAPPELL: He gave us a lot of information on what his job is. I'll allow her to inquire into what he did or didn't do. Overruled.

BY MS. DAVIS:

Q. Dr. Liker, it is not your job to approve every piece of advertising disseminated by POM; is that correct?

A. That is correct.

Q. Your primary role as medical director for POM has been to identify experts in various fields of science where POM has been interested in determining whether POM products had an effect; is that right?

A. I don't think that's a complete answer, but that is part of my responsibility as I've testified previously.

Q. And you would present experts with -- strike that.

As part of your job as medical director, you would seek out leaders in the field in various -- in various scientific areas; is that correct?

A. That is correct.

Q. And you would present experts with the scientific question POM wanted to answer; is that right?

A. Correct.

Q. And the experts that you sought out would draft a protocol seeking to answer that question; is that right?

A. Correct.

Q. And you would review the protocol?

A. Correct.

Q. And you would provide feedback?

A. Correct.

Q. You would tweak it if necessary?

A. Correct.

Q. You wouldn't actually prepare the first draft of a protocol; is that right?

A. Correct.

Q. So you relied on other experts to provide input when it comes -- when it came to protocol design; is that right?

A. Correct.

Q. Earlier you testified that you're board certified in internal medicine; is that right?

A. Correct.

Q. You're not certified in any medical subspecialties; is that right?

A. No, I'm not.

Q. So you are a generalist; is that right?

A. Correct. I'm a board-certified general internal medicine physician.

Q. And once POM engaged a scientist to conduct research on its products, you would serve as the intermediary or liaison between POM and the scientist; is that right?

A. Correct.

Q. Now, Dr. Liker, in your role as the lead -- liaison between POM and the experts, you reviewed budgets for proposed studies; is that right?

A. Correct.

MS. DIAZ: Objection, Your Honor. This is outside the scope. She's adding whole categories of areas of things that were not covered in his direct.

MS. DAVIS: Well, actually on direct he did discuss -- talked about the size of the study, how to power a study, study design, so I think it's relevant, goes to -- directly to what he testified during his

direct examination.

MS. DIAZ: If I may respond, Your Honor?

JUDGE CHAPPELL: The question as posed inquires into more than he testified into, so you're going to have to lay a foundation to connect it to his testimony.

The objection is sustained.

MS. DAVIS: Okay.

JUDGE CHAPPELL: You can add more if you'd like, Ms. Diaz.

MS. DIAZ: I would add that there's --

JUDGE CHAPPELL: I actually was being funny because I ruled in your favor, but if you want to go on...

MS. DIAZ: Okay.

JUDGE CHAPPELL: My attempt at humor I guess.

BY MS. DAVIS:

Q. Dr. Liker, during your direct examination, you testified that -- I believe you testified that Mr. Resnick at one point made a decision to make the ED study smaller than had been recommended; is that right?

A. Yeah. I believe it was a collective decision, but Mr. Resnick was involved in that decision-making process.

Q. And isn't it true that part of that

decision-making process would involve an assessment of the cost of a particular study?

A. Correct.

Q. And in reaching a decision about the size or scope of the study, you would have some conversation with the investigator or scientist conducting the study regarding the cost, would you not?

A. Correct.

Q. So you did engage in negotiations with experts regarding budgets for studies; is that right?

A. Correct.

Q. And so during these negotiations you had to balance how much to spend with how large the study should be; is that right?

A. Correct.

Q. And sometimes an investigator would propose a budget that was higher than the amount POM wanted to spend on a study; is that right?

A. Certainly.

Q. And when that happened, you would go back to the investigator and adjust the protocol to stay within budget; is that right?

A. I think I would review with the investigator what the objectives were, what the budget was, and we would try to work in a collaborative fashion to adjust

the protocol to hopefully meet the objectives that we're hoping to achieve as well as stay within the budget that was set.

Q. Okay. And you worked to make sure that POM was getting the maximum value for the dollars it was putting forward; is that right?

A. Correct. I wasn't going to let anybody waste POM's money.

Q. And you are familiar with Christopher Forest?

A. I am.

Q. And Mr. Forest is a nurse practitioner who worked on the study looking at the effect of POM juice on ED; is that right?

A. In conjunction with Dr. Padma-Nathan, yes.

Q. And -- but he's listed as the first author on the journal article reporting the results of the ED study.

A. Correct.

Q. And Mr. Forest was in charge of the day-to-day execution of the ED study; is that right?

A. Correct.

Q. So you worked with Mr. Forest to determine the size and power of the study; is that right?

A. I would think a more accurate characterization is I worked with Mr. Forest and Dr. Padma-Nathan.

Q. Well, you told Mr. Forest that you would rather underpower a study than to go outside a particular budget range; isn't that correct?

A. Correct.

Q. And that decision to underpower the study rather than go outside a particular budget range was more of a business decision than a scientific decision; is that right?

A. I'm not sure if it's a business or a scientific decision. It was a decision that we had made internally that there was a certain budget that we wanted to stay within, and we asked Dr. Padma-Nathan and Mr. Forest to come up with the best protocol they could within the constraints of the budget.

Q. Okay. Do you recall having your deposition taken in this case in January --

A. I do.

Q. -- 2011?

A. I do.

Q. And do you recall testifying -- and at that time you testified just so -- at that time you testified, "Just so you understand, it's more of a business decision than a scientific decision," when I asked you about underpowering the study rather than going outside the -- a budget.

A. If that's what my deposition says, I'm sure that's what I said.

Q. And Dr. Liker, in your role as medical director for POM you participated in meetings with Mr. Resnick, Mr. Tupper, other people to discuss medical research the company was conducting; is that right?

A. Correct.

Q. And those meetings would include discussions about the data from POM's studies; right?

A. Correct.

Q. And those meetings would also include discussions about particular areas of science POM should concentrate its research efforts in the future; is that right?

A. Yes, that's correct.

Q. And what research areas should take priority; would that be correct?

A. Correct.

Q. And in your role as medical director for POM you would at times provide POM leadership with information about particular research areas of interest; is that right?

A. Yes.

Q. Dr. Liker, I'd like to show you what's been marked as Exhibit 2019.

Dr. Liker, if you'd take a minute to look at CX 2019 and let me know when you're done.

(Pause in the proceedings.)

A. Okay. I've reviewed it.

Q. Okay. And Dr. Liker, Exhibit 2019 is an e-mail chain in which your name appears; is that right?

A. Correct.

Q. And the second e-mail from the top is an e-mail from you to Mark Dreher and Matt Tupper, dated March 22, 2007; is that right?

A. Correct.

Q. And as you testified earlier, Mr. Dreher and Mr. Tupper are two of the individuals who would participate in these meetings to discuss research and decide upon future research; is that right?

A. That is right.

Q. And the subject line of this e-mail is RE: Forward: Alzheimer's Population and Cost Data; is that right?

A. That is right.

Q. And just below the subject line you wrote that you thought you might like to see this; is that correct?

A. That is correct.

Q. And you have forwarded what appears to be an

article entitled Alzheimer Disease Toll Rising; is that correct?

A. Yeah, I'm not sure if I would characterize it as an article, but it seems like it's a summary of some information that was released about the degree of Alzheimer's disease in the United States.

Q. Okay. And the third paragraph below this line says that while mortality rates for heart disease, stroke, and breast and prostate cancer all declined between 2000 and 2004, the death rate from Alzheimer rose 33 percent; is that right?

A. Yes.

Q. And you sent this information --

MS. DIAZ: Your Honor, objection. Apologies. Objection. It looks like -- it's not clear whether this exhibit -- this is actually an exhibit. And if it's used for impeachment, it's also not clear at this stage what it's being used to impeach on.

MS. DAVIS: We're using it for cross-examination purposes.

JUDGE CHAPPELL: For what purpose?

MS. DAVIS: Well, I believe that it goes to their goals in -- well, early on, on direct, Dr. Liker testified about what POM's goal was in conducting research, that it was to get -- that the purpose was to

get the right answer, just to find out the truth, and I'm probing that area.

JUDGE CHAPPELL: I don't think you've laid a proper foundation for that. You need to move on unless you lay a better foundation for where you're going with this exhibit, so you need to take it off the screen.

MS. DAVIS: Okay.

JUDGE CHAPPELL: The objection is sustained.

BY MS. DAVIS:

Q. On direct examination, Dr. Liker, you testified about the decision to publish the Davidson CIMT study; is that right?

A. Correct.

Q. Now, the initial -- the 18-month results of that study showed no statistical difference between treatment and placebo groups; is that right?

A. Correct.

Q. And those results first became available in 2006?

A. I don't have that date committed to memory.

Q. Okay. But does that sound -- is that approximately --

A. That's certainly plausible, yes.

Q. And -- but those results were not published in a journal at that time; is that right?

A. Correct.

Q. And earlier you testified that POM hired an independent company to conduct a review of the results; is that right?

A. I'm not sure if those are the exact words I used but that the images were reread by a company that was not affiliated with the study.

Q. And subsequently Dr. Davidson asked POM for permission to present an abstract reporting the results of that study at the American Heart Association in 2007; is that right?

A. That is correct.

Q. And Dr. Davidson's request came to you because you were the primary interface between POM and Dr. Davidson?

A. Correct.

Q. Okay. And permission was denied; is that correct?

A. Permission to present that study in 2007 at the American Heart Association meeting was denied.

Q. And Mr. Resnick and Mr. Tupper made that decision to deny Dr. Davidson permission to present; is that right?

A. Again, I think there was probably internal discussion about it, but certainly Mr. Resnick and

Mr. Tupper would have been involved in making that decision.

Q. And you were just the intermediary between POM and Dr. Davidson; right?

A. No. I'm a member of the scientific leadership team at POM, so I certainly served as an intermediary, but I was serving as an intermediary because I was and am the medical director of POM Wonderful.

Q. You did not try to convince POM to permit Davidson to present the findings; is that correct?

A. Again, I think I presented the Dr. Davidson case as to why he was so enthusiastic about the results and presented I believe the pros and cons of having that paper published -- or I shouldn't say paper published -- that abstract submitted for the American Heart Association meeting, and I think collectively we made a decision that that wasn't something we wanted to do at that time.

Q. Dr. Liker, do you recall having your deposition taken in January 2011?

A. I do.

Q. And at that time I asked you: Dr. Liker, do you have any of recollection of trying to convince the folks of POM to allow Dr. Davidson to present his abstract at the American Heart Association? And your answer was: I

don't think my role was to convince. I think my role was to lay out the pros and cons and to let the forces that be make a decision.

A. Correct. And I think I just testified that I was going to present the pros and the cons. Again, I consider myself as part of the forces that be, but there was a group of us that made a collective decision.

Q. And again, do you recall having your deposition taken this January 2011 and I asked you during your deposition, "But you don't recall exactly who made the decision?" And you said, "I don't know if I was -- again, I don't remember the specific communication. Again, the" --

(Admonition from the court reporter.)

BY MS. DAVIS:

Q. "QUESTION: But you don't recall exactly who made the decision?

"ANSWER: I don't know if I was -- again, I don't remember the specific communication, whether I asked Matt, Matt asked Stewart or I asked Stewart and Stewart discussed it with Matt. But, again, the three people that would have been involved in that process would have been, again, I was the intermediary between the company and Davidson, and the decision was I think

ultimately made by, you know, Matt and Stewart, and they conveyed that to me and then I conveyed that to Davidson."

Now, Dr. Liker, in 2007, Mark Dreher asked you about including the results of the Davidson CIMT study within a monograph for the American Botanical Council; is that correct?

A. That's correct.

Q. And you told Mr. Dreher that you didn't think Mr. Resnick wanted the results in the public domain; is that correct?

A. Correct.

Q. And the Davidson CIMT study results were not published until 2009; is that right?

A. Correct.

Q. And the manuscript was not submitted till late 2008 for publication; is that right?

A. I'm not certain, but if you tell me that's the date and that's the date on the article that says submitted late 2008, I would trust you at your word.

Q. In fact the article was rejected once, and then it was resubmitted; is that right?

A. I actually don't have recollection of that, but that's certainly a possibility and probably was one of the things that led to the delay as, as I testified to

earlier today, that sometimes papers are actually not accepted by a journal.

Q. So if the article was not submitted to 2008, the delay in submission would have been the result of an internal delay; is that correct?

A. Again, there were a combination of things that led to the delay, as I've previously testified to.

Q. Now, Dr. Liker, on direct you testified about some work done by Dr. Rosenfeld; is that right?

A. Correct.

Q. And Dr. Rosenfeld was a top expert in his field; is that correct?

A. Correct.

Q. And in his animal studies for POM on late-stage plaque in mice he found no effect; is that correct?

A. Correct.

Q. And given his reputation, this was an important and reliable finding; correct?

A. Correct.

Q. And this finding should be considered as part of the body of evidence on POM's effect on plaque; is that right?

A. I think it's part of the overall body, yes.

Q. And you shouldn't ignore the result.

A. Correct.

Q. And this work was not published; is that correct?

A. I'm not aware if it was published or not published.

Q. Dr. Liker, during your direct, you indicated that the results of the Davidson CIMT study came as a surprise to you and the folks at POM; is that right?

A. The 18-month data was a surprise to us, yes.

Q. And that is because the previous studies that had been conducted had shown good results; is that right?

A. Correct.

Q. Dr. Liker, you are familiar with the results of the Ornish 2005 myocardial perfusion study.

A. Yes, I am.

Q. And that study showed no change in blood pressure; is that correct?

A. I think that is correct.

Q. And the Ornish 2005 IMT study also showed no change in blood pressure; is that correct?

A. Again, not that I'm aware of. Correct.

Q. And the Ornish IMT study, 2005 study, showed no change in IMT at 12 months; is that correct?

A. The Ornish IMT study was actually never completed.

Q. Okay. Dr. Liker, I'd like to show you Exhibit CX 1029. And I'd like to direct your attention to page 3 of that exhibit.

Well, actually let's go back to page 1.

This is the POM Wonderful medical research portfolio review, dated January 13, 2009; is that right?

A. Correct.

Q. And is this the type of document you would have had available during some of those internal meetings that you had with Mr. Resnick and Mr. Tupper regarding research?

A. Yes.

Q. And have you seen this document before?

A. Yes.

Q. If we could look at --

MS. DIAZ: Objection, Your Honor. This is far beyond the scope of direct now.

MS. DAVIS: Well, Dr. Liker testified in his direct that the results had been positive or the results had been good, so they were surprised about the Davidson CIMT results. What I'm trying to establish here is that in fact that there were studies that had negative results.

JUDGE CHAPPELL: But you haven't asked him that

question. He hasn't disagreed with you.

MS. DAVIS: Well, he said he didn't know, so I'm using this to refresh his memory, if at all.

JUDGE CHAPPELL: I didn't hear that foundation.

MS. DAVIS: Okay. I asked the question -- I asked him whether he -- whether the Ornish IMT 2005 study showed any change in IMT at 12 months, and he said he didn't recall.

JUDGE CHAPPELL: I believe he said it wasn't completed.

MS. DAVIS: But -- well, can I probe a little bit further? There were some results that did become available.

JUDGE CHAPPELL: You're going to need to rephrase.

BY MS. DAVIS:

Q. Dr. Liker, even though the Ornish IMT study was not completed, there were some results that did become available and were shared with POM; is that correct?

A. Correct.

Q. Okay. And those results showed that there was no change in IMT; is that right?

A. That is my recollection.

Q. And Dr. Davidson also conducted a study on flow-mediated dilation; is that correct?

A. I would refer to it as BART, but yes, you can call it flow-mediated dilation.

Q. And the Davidson study showed no change in -- no statistically significant change in the BART results; is that right?

MS. DIAZ: Objection, Your Honor. Again, when -- this is beyond the scope of direct.

When Dr. Liker spoke, he wasn't speaking in terms of the results of the various studies, with the exception of the Davidson IMT study. This is -- complaint counsel is using Dr. Liker now to go over the results of various studies, the topic of which was never raised on direct, with the exception again of the Davidson IMT study and the 12 and 18-month variation there. All these other studies were not discussed substantively. We do have experts designated for those topics.

MS. DAVIS: I'm trying to impeach him regarding his assertion that the results that they had received up until the Davidson CIMT study had been positive.

JUDGE CHAPPELL: I haven't heard him disagree with you on that. It's improper impeachment unless the witness doesn't agree with you, and then you can say what about this, what about that. I haven't heard that.

The objection is sustained.

BY MS. DAVIS:

Q. After the Davidson results came in, did you advise anyone at POM that they should make any change to their marketing regarding cardiovascular claims?

A. I don't recall.

Q. So, Dr. Liker, would it be fair to say that not all the results that -- results of the POM cardiovascular studies were positive prior to the Davidson CIMT study?

A. Yeah. I would say the overwhelming majority of the studies were positive, but I think your statement is accurate that not all the studies were positive.

Q. Dr. Liker, on direct you testified about scientists provided advice to the company regarding research areas that the company should engage in; is that correct?

A. Correct.

Q. And did any of these scientists provide any advice on what types of claims could be made by the company to the public based on the research program?

A. Not that I'm aware of.

Q. Okay. And did any of these scientists ever say or tell POM not to conduct randomized clinical trials?

A. I don't know if anyone outright came out and

said don't conduct a randomized clinical trial. A number of different types of studies were suggested, but I do not recall anyone saying don't conduct RCTs.

Q. And did anyone -- sorry. Strike that.

Did any of these scientists advise POM not to pursue human clinical research?

A. Not that I'm aware of.

Q. And these scientists helped POM design future studies; is that right?

A. Correct.

Q. Dr. Liker, you have -- you testified that you have authored several scientific papers; is that right, or published several scientific papers?

A. Probably "coauthored" is a better term, but yes, an author or coauthor. I haven't been the sole author. I've been a coauthor on several papers.

Q. And you've coauthored approximately 11 peer-reviewed scientific papers; is that right?

A. Yes. I believe they're all peer-reviewed.

Q. And four of these report on the results of studies on POM juice or the extract; is that correct?

A. I believe that's correct.

Q. And those papers would include the Aviram CIMT study?

A. Yes.

Q. And the Pantuck phase II study?

A. Correct.

Q. And the Forest study?

A. Correct.

Q. And the Davidson study.

A. Correct.

Q. And your name appears in the list of authors on the study; is that correct?

A. Yes, it does.

Q. In, for example, the Aviram study you indicate your affiliation with the David Geffen School of Medicine at UCLA; is that right?

A. Correct.

Q. And there's no statement disclosing your role as a medical consultant to POM; is that right?

A. I don't believe there was. Correct.

Q. But the work that you did in connection with the Aviram study would have been done in your role --

MS. DIAZ: Objection, Your Honor. Again, I -- I've not seen how this is within the scope of direct, authorship issue, and it's just not clear to me how this is part of -- within the scope.

MS. DAVIS: It goes to credibility, Your Honor.

JUDGE CHAPPELL: Well, based on your representation, I'll allow it. Overruled.

BY MS. DAVIS:

Q. Now, you were offered authorship on the Aviram study because of your affiliation with POM; is that right?

A. I think it was my affiliation with the study.

Q. But the work you did on that study was done in your role as medical director for POM; is that right?

A. It was, but I don't think that takes away the fact that I was at the time an assistant clinical professor of medicine at UCLA. And additionally, every other author on that paper listed their academic affiliation.

Q. And the same thing is true for the Pantuck phase II study, you listed your academic affiliation but made no disclosure regarding your POM affiliation; is that right?

A. Correct. Like every other single author on that paper, I listed my academic affiliation.

Q. And the same thing is true of the Forest study; is that right?

A. Correct.

Q. And the same thing is true of the Davidson study; is that right?

A. I believe again with any -- any paper that I've ever published I've always listed my academic

affiliation.

Q. But your work on the Pantuck phase II study, the Forest study, the Davidson study, that was all done in your role as POM medical director; is that correct?

A. I was both an assistant professor of medicine at UCLA and a medical director at POM.

Q. Now, Dr. Liker, there was a press release issued regarding the results of the Forest study; is that right?

A. Correct.

Q. And you had an opportunity to review and make suggestions on a draft of the release before it was issued; is that right?

A. I believe that I did.

MS. DIAZ: Your Honor, objection. Again, this looks like it's way out beyond the scope.

MS. DAVIS: Again, it goes to credibility.

JUDGE CHAPPELL: Well, impeachment and credibility are always within the scope. Based on her representation, the objection is overruled.

BY MS. DAVIS:

Q. And you suggested that the press release should include a statement from Dr. Padma-Nathan instead of yourself; is that correct?

A. Correct. Dr. Padma-Nathan is a New England

Journal of Medicine published author, and I thought -- and he's a urologist, if I'm not mistaken, so I thought there would be more credibility associated with a previously published author in the New England Journal of Medicine who happens to be a urologist as opposed to a general internist.

Q. And you believe that a statement from Dr. Padma-Nathan would add more credibility because he's not the medical director for POM; is that right?

A. That's not what I said. I said that he was a New England Journal of Medicine published author and that he was a urologist and that I am neither of those things. This was a paper on erectile dysfunction, and he was the most appropriate person to be quoted for that study.

MS. DAVIS: Can I take a minute to confer with counsel?

JUDGE CHAPPELL: Go ahead.

(Pause in the proceedings.)

Do you have more questions?

MS. DAVIS: Yes, I do. Sorry.

BY MS. DAVIS:

Q. Dr. Liker, the Journal of Cardiology in which the Davidson article appears is published by Elsevier; is that correct?

A. I believe that's correct. I believe it's the American Journal of Cardiology is published by Elsevier, if that's how it's pronounced, yes.

Q. And in 2008 Elsevier had disclosure policies requiring authors to declare possible conflicts of interest.

Wouldn't your failure to disclose your POM affiliation be in violation of that policy?

A. I was not aware of that policy.

Q. But would you -- -- wouldn't you consider your employment by POM to be a possible conflict of interest under this policy?

A. Again, I'm not an employee of POM. I'm not an employee of POM. I'm a consultant to POM.

Q. Wouldn't you consider your consultancy arrangement with POM to be a possible conflict of interest?

A. It could be.

Q. Dr. Liker, you're paid approximately $9,750 a month for the work you do as POM medical director; is that right?

A. That is correct.

Q. And you are paid $250,000 a year for the wellness coordinator activities you perform for POM; is that right?

A. In addition to the direct medical care that I provide for countless employees of POM -- or of I should say Roll.

MS. DAVIS: That's it. I have no further questions.

JUDGE CHAPPELL: Redirect?

MS. DIAZ: None, Your Honor.

JUDGE CHAPPELL: Thank you, sir. You're excused.

THE WITNESS: Thank you, Your Honor.

JUDGE CHAPPELL: We're going to take a lunch break. We'll reconvene at 2:15.

(Whereupon, at 1:09 p.m., a lunch recess was taken.)

A F T E R N O O N  S E S S I O N

(2:18 p.m.)

JUDGE CHAPPELL: Back on the record Docket 9344.

Next witness.

MR. FIELDS: Yes, Your Honor.

Our next witness is Dr. David Heber, H-E-B-E-R.

- - - - -

Whereupon --

DAVID HEBER, M.D.

a witness, called for examination, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. FIELDS:

Q. Dr. Heber, I'm going to spend a little time on your qualifications and your background.

Is it correct you got your undergraduate degree in chemistry at UCLA summa cum laude?

A. That's correct.

Q. And was it chemistry?

A. Chemistry.

Q. And then you graduated from Harvard Medical School?

A. That's correct.

Q. Okay. You were also high in your class there?

A. Top 10 percent.

Q. And is it correct that in addition to your M.D. you have a Ph.D. in human physiology?

A. That's correct.

Q. Now, I'm not going to go into all of your accomplishments, but I'll mention some.

Is it correct that for 33 years you've been a member of the faculty of UCLA medical school?

A. Yes.

Q. And you are a professor of medicine in public health there?

A. That's correct.

Q. And is it correct that you're the founding director of the UCLA Center for Human Nutrition, which is a part of the UCLA medical school?

A. Yes.

Q. Would you briefly explain what the Center for Human Nutrition at UCLA medical school does.

A. Yes. It's a center for clinical research, education and public health endeavors in which it centralizes the activities of researchers from various parts of the UCLA medical school as well as the School of Public Health and the School of Nursing. And our mission is really to promote the application of new knowledge in human nutrition to human health.

Q. Now, is it correct that, as indicated in your

CV, you served on and headed a number of committees dealing with nutrition and its impact on diseases?

A. Yes.

For a number of years I've been an adviser to the National Institutes of Health. I was a member of the National Cancer Institute nutritional implementation committee in 1985.

I've also worked with the Department of Defense research programs in nutrition and cancer, both reviewing their grants and also reviewing the strategic plan in particular for cancer and nutrition.

Q. And is it correct that you were the coinvestor (sic) of the UCLA segment of the Women's Health Initiative?

A. I was the principal coinvestigator of the Women's Health Initiative, a ten-year study of over 600,000 women around the United States funded by the National Institutes of Health. And I was in charge of the nutrition component, and we studied over 1200 women at UCLA in that study for a period of ten years.

Q. Okay. And is that the study that cost $600 million we've had testimony about?

A. Yes, it is. It's the most expensive women's health study in history.

And I'm a member along with a number of other

authors on about four papers that resulted from that study, which was a very important study in pointing out some of the problems with postmenopausal hormone replacement, which up until that time was common practice in medicine.

JUDGE CHAPPELL: Hold on a second.

Is that coinvestor?

THE WITNESS: Coinvestigator.

MR. FIELDS: Hopefully not coinvestor at 600 million.

BY MR. FIELDS:

Q. And is it true you've been coauthor on many scientific studies in the field of nutrition and its relation to various diseases, such as coronary heart disease, prostate cancer and diabetes?

A. Yes. I have over 200 peer-reviewed publications.

Q. And is it correct that you were editor in chief of the leading text on nutritional oncology, that is, nutrition's impact on cancer, including prostate cancer?

A. Yes, that's correct. For two editions.

Q. And you've written a second book on the importance of diet in maintaining health and resisting diseases, including coronary heart disease?

A. Yes.

Q. And is it correct that you've also written 25 chapters in other scientific texts?

A. Yes, that's correct.

Q. Have you prepared a report in this matter and a CV?

A. Yes.

MR. FIELDS: Okay.

Your Honor, we move that the court accept Dr. Heber as an expert and admit his report in evidence.

MS. EVANS: Your Honor, we would ask that Mr. Fields specify an expert in what.

MR. FIELDS: He is an expert in the relationship between nutrition and various diseases, including coronary heart disease and prostate cancer, other diseases as well, but those are the things he's going to talk about.

JUDGE CHAPPELL: Okay. What about the offer of the expert report? Has that not been agreed to?

MS. EVANS: That's -- that's acceptable, yes.

JUDGE CHAPPELL: Is that exhibit not already on the joint exhibit?

MR. FIELDS: It's already on the list, Your Honor.

JUDGE CHAPPELL: So that's done.

And regarding him being an expert, any opinions that meet the proper legal standards will be considered.

MR. FIELDS: Thank you, Your Honor.

BY MR. FIELDS:

Q. Doctor, are you in general familiar with the various tests, the scientific studies that have been done for Roll International?

A. Yes.

Q. All right. And what is your relationship, if any, to Roll International?

A. I'm a scientific adviser to Roll International.

Q. Okay. And are you paid a fee by Roll International?

A. No. I'm not paid a fee, but my center at UCLA has received both research grants and unrestricted gifts from various Roll entities over the years.

JUDGE CHAPPELL: Hold it a second.

What is an unrestricted gift?

THE WITNESS: That's a gift to the university which can be used in an unrestricted way for the research and education missions of the center; that is, the donor does not direct the use of those funds. It's usually provided with a letter of donation which

indicates that, and it goes to the university and then is put into a pile of unrestricted funds together with other unrestricted funds, and those can be used at the discretion of the university.

JUDGE CHAPPELL: Like to a general fund.

THE WITNESS: It's to a general fund but specific in this case to the Center for Human Nutrition.

BY MR. FIELDS:

Q. The check goes to The Regents of the University of California; is that correct?

A. Yes. The check is deposited, made payable to The Regents of the University of California.

Q. Okay. Are you getting paid anything for your work as an expert in this case?

A. I've not been paid anything for my work as an expert in this case.

Q. Okay. Now, when did you begin studying fruits and vegetables and their effect on health?

A. I started studying the general area of fruit and vegetables and antioxidants in approximately 1995.

Q. And what was your first involvement in scientific studies on pomegranate juice?

A. My first involvement with pomegranate probably occurred somewhere around 2001 or 2002. We received a National Institutes of Health center on botanical

research and the diet, and that was received in 1999. And in about 2002 we had started work on pomegranate.

Q. And those were studies before you -- any studies were commissioned by the Resnicks?

A. Well, we were doing basic research on pomegranate because of its unique characteristics as an antioxidant through our center prior to my formally becoming a scientific adviser to Roll.

Q. And would you briefly describe your studies and what they showed, these preliminary studies.

A. Well, for example, there was a mythology that pomegranate contained female hormones such as estrogen, so we had set up in our laboratory a breast cancer cell line that had engineered into it a very sensitive receptor for estrogen. And we actually tested pomegranate juice against that receptor, along with other fruits and vegetables, and it turned out that it did not have any effect on that estrogen receptor.

And that was an area that we were very interested in because of my interest in breast cancer prevention where I had previously done studies with soy isoflavones which are said to have an estrogenic effect, and we looked at a number of other chemicals found in common fruits and vegetables in that study.

Q. Other than the estrogen study, can you recall

any of the other specific studies you did on pomegranates before you were dealing with the POM or the Roll studies?

A. Well, we began studies on pharmacokinetics of the pomegranate juice with Roll support. But in parallel to that, we were doing studies, basic studies, on colon cancer cells, where we were trying to define whether a single substance within the pomegranate or the total pomegranate juice would have different effects on colon cancer cell growth. And these were not studies that were commissioned by the Resnicks or by Roll. These were studies that we initiated out of our own scientific interest.

Q. When you say "we" you're talking about UCLA --

A. The center. Yes, my faculty and the center. And there were multiple authors on those papers. And I'm the director of the center.

Q. And what was the result with regard to the effect of pomegranate juice on cancer cells in --

A. Well, it's very interesting, and it's a finding that we're following up now, and that is that pomegranate did inhibit the growth of several different cancer cell lines regardless of their specific molecular differences.

And we believe that the colon cells may be an

area that's not been investigated much yet that requires more science in the future, and we're planning to do that. It may well be that pomegranate has effects not only on the colon cells but on the bacteria in the colon which then, as we'll get into later, metabolize pomegranate substances but may also have beneficial effects on the population of the bacteria in the colon.

So there's some very interesting areas in a number of different types of cancer. We've also studied the effect of pomegranate in breast cancer, its effects on a particular enzyme that makes estrogen from the body fat, and that's a primary source of estrogen in women after the age of 50. And we believe that pomegranate may have a role in that area as well.

Q. Now, in the course of your studies, have you done any research and/or writing with respect to the history of the pomegranate?

A. Yes, I have.

Q. Would you tell us briefly about the history of the pomegranate.

A. Well, this was discussed a little bit this morning, but I think what I would like to emphasize is both the unique botany and the unique chemistry of the pomegranate.

The pomegranate evolved in Central Asia in an

area called today modern-day Turkmenistan in the high mountain range where it was exposed to radiation from the sun, frequent earthquakes and drought. And this originally was a bush that in dry years would put out a very special root.

What's fascinating about this plant is that most plant families have multiple species, but the pomegranate family, there's only one other species that grows on an island off of Africa, and then there's the pomegranate.

And what's really interesting about it is if you harvest a pomegranate fruit and leave it unrefrigerated for months, you can open up that pomegranate and the seeds will be perfectly fine. And that's because of the potent antioxidant found in the peel that protects those seeds, which are the germ material, the genetic material of the pomegranate.

And so throughout history, the pomegranate has been valued for its health. And it is on the shield of the Royal College of Physicians in England. It was in the -- featured on the millennium issue of the British Medical Journal because there are more references to the pomegranate's health benefits than almost any other fruit, and so I really think it's a unique one.

From a chemistry standpoint, the peel and the seeds to a lesser extent contain a large polyphenol.

Now, polyphenol is a large class of chemicals that we take into our bodies every day that are the primary antioxidants in the body. People often talk about vitamin C as an antioxidant, but we only take in, you know, maybe 45 to 200 milligrams of that. You might take in a gram of polyphenols every day, so the polyphenol class is very important.

In the polyphenol class, the pomegranate's ellagitannin, which is the unique chemical in the pomegranates -- it's not found in any other fruit -- has a very large molecular weight and is a very potent antioxidant, one of the most potent antioxidants known.

Q. Were pomegranates mentioned in the bible, for example?

A. Yes. Pomegranates were mentioned in the bible, although they probably go back even further to Egyptian times. They were in the temple of Solomon. There are many references in Greek mythology and throughout history to the health benefits of the pomegranate.

But one can apply those ancient myths and investigate them using modern scientific methods, and that's what really attracted us to the pomegranate.

Q. Over all those centuries are you aware of any

report of anybody ever being harmed by eating a pomegranate or drinking its juice?

A. No. Like other fruits or the juice, taken in nutritional amounts, there are no reports of toxicity.

Q. When did you begin research on pomegranate juice that was sponsored by the Resnicks or Roll?

A. I would say somewhere around 2003 that we began communicating with Stewart Resnick and other individuals at POM Wonderful about pomegranate research specifically.

And our first studies were directed at how the pomegranate molecules are broken down, absorbed into the body and then converted into other substances which might express where the health benefits were coming from.

Q. Okay. Now, before we get into the specific studies, I want to ask you about your opinion on the standard of scientific evidence needed to substantiate the benefits of a pure fruit or juice like pomegranate.

In dealing with that kind of nutrient, with a pure fruit or pure fruit juice like pomegranate juice, as opposed to a drug, is it your opinion that only RCT studies are the acceptable evidence of the juice's ability to promote health?

A. No. Along with many other leaders in

nutrition, it is my opinion that a randomized controlled trial or RCT has some significant drawbacks when it comes to the study of nutrient substances and that what should be considered is the totality of evidence from cellular mechanism studies, studies in animals, as well as studies in humans, some of which may not be clinical RCTs, that is, randomized controlled trials.

Q. Just to be clear, are you saying that those -- that the totality of those studies need not necessarily include RCTs?

A. That's correct.

They have their use, but there are also some drawbacks to RCTs. They're much more appropriate for registering a new drug where there is a target of action, there's a single purified compound, there are perhaps significant adverse events. And in registering a drug one often does what are called phase I and phase II studies in which you learn a lot about the mechanism, you learn about the target, and you really know how your study is supposed to come out.

So you set that study up with enough people in it, and these are often very large, expensive studies costing hundreds of millions of dollars, and they are defined to reach a specific endpoint, and that's a

randomized, placebo-controlled trial and usually with a large number of subjects.

That model doesn't work well for nutrient substances because when you look at the totality of evidence you understand the mechanism of action, and you're able to develop scientific information that can lead to acceptance in the medical community of the importance of these nutritional substances.

So for many nutritional substances, such as broccoli, which was mentioned this morning, we don't have randomized controlled trial evidence and probably never will because that is much more appropriate for a drug than it is for a nutrient.

Q. Now, Drs. Stampfer and Blumberg wrote an article saying -- this is in evidence, this article -- saying that in dealing with nutrients, RCT tests were often infeasible and too expensive and that the drug standard should not be applied.

Are you in agreement with that?

A. Yes, I am.

Q. Now, earlier this morning -- I think you were here in the audience waiting to testify -- His Honor asked Dr. Liker if there was somebody around who was I think he said the be-all or know-all of all the studies done on behalf of Roll.

As close as anybody could come to that, are you that guy?

A. In some extent I am. I think my combination of my background in chemistry and the fact that we have this phytochemical laboratory and the clinical research unit and basic laboratories all at our Center for Human Nutrition and my interrelationship with many other specialists at UCLA in different specialties as they relate to nutrition, I'm often included in those leadership discussions because the group wanted to be sure that it made sense that the physiology and the chemistry of this particular thing would make sense in terms of the mechanisms underlying the actions of pomegranate.

So I would say I'm an expert in the mechanisms of oxidation and inflammation, and these are now mechanisms that cross organ specialties, so they affect many different organs in the body. And I'm also -- also very familiar with the work on nitric oxide and the effects nitric oxide has on the blood vessels.

So I think that my role has been as a kind of a scientific adviser to the group.

Q. All right. Let's turn to the specific studies that you know about. I'm not going to cover every one.

JUDGE CHAPPELL: Let me ask a question about

pomegranates.

Are there a number of varieties?

THE WITNESS: There are about 1100 varieties, and about 50 are grown commercially. The predominant one in the United States is the Wonderful variety of pomegranate, and that's not a company name, but that's actually a variety of pomegranate. The specie is called Punica granatum, which basically means apple of Grenada.

JUDGE CHAPPELL: Do they vary as much as, say, peppers, like a sweet banana pepper versus a Scotch bonnet or habanero pepper?

THE WITNESS: There have been a great deal of variation around the world, but the basic chemistry is the same.

The Spanish pomegranate, which is light orange in color, is used primarily to make cocktails as a kind of a sweetener.

The dark red pomegranate, the POM Wonderful pomegranate, is the one that has been most studied around the world in many countries.

And at the University of California Davis, which is the agriculture school for the State of California, they actually have a germ library. And Dr. Kader there has actually done some studies as well of the varieties

of pomegranate and how this chemistry pretty much repeats itself so that this species stays intact.

But when you talk about a variety of something, like a pepper, different colors, that's different than another species, so species would have significant structural differences in the plant. These are all the same species but different varieties.

JUDGE CHAPPELL: What I'm trying to get at is whether there's enough difference in the varieties such that it would affect a study or a trial, would one pomegranate transfer to all the other varieties.

THE WITNESS: I think that the -- that people have looked at varieties of pomegranate from around the world and the basic chemistries -- we'll get to the unique chemistry -- would be the same. It would be generalizable. And there have been a number of studies which have looked at pomegranates from different countries, and this would be generalizable.

JUDGE CHAPPELL: All right. Thank you.

BY MR. FIELDS:

Q. Okay. Let's start with the studies that show how pomegranates work on these various diseases that we've been talking about.

A. Well, I think the first thing we have to talk about is what's in the pomegranate. There's about

124 different chemicals in the pomegranate.

And our work has concentrated primarily on the scientific basis of a unique family called hydrolyzable tannins, and one of these is called punicalagin. And remember, the name for pomegranate is Punica granatum, so punicalagin only occurs in the pomegranate as an edible fruit. That's the only edible fruit that has it. There's some herbs somewhere that may have it, but only in terms of edible things that people put in their diet, punicalagin is unique. And it's a very potent antioxidant.

Now, it is a large molecule, so what happens is, when you drink pomegranate juice or take a capsule containing an extract of pomegranate juice, this hydrolyzable tannin is actually broken apart in the surface of the small intestine, and another molecule within the structure of that large molecule called ellagic acid is released.

Ellagic acid is found in raspberries and strawberries and other berry fruits and widely in other plants, but the difference here is, because of the structure of the pomegranate, this is released over a period of about six hours, and then it's broken down further by the body.

What's not absorbed by the body and stays in the

intestine is metabolized by the bacteria that we all carry inside of our intestinal tract and broken down into another group of substances called urolithins. And these begin to appear in urine at about between 12 and 56 hours after drinking a single glass of pomegranate juice. And one of these, urolithin A, is particularly potent and has -- we have administered that in a number of experiments and shown that it had some of the significant properties that we've been studying in pomegranate, as does the ellagic acid which gets into the blood.

So this first study that we published was on the metabolism and appearance in the blood of these substances.

Q. And how does the antioxidant work?

You said it's full of antioxidants and these other things you mentioned.

How does that work, for example, on something called free radicals, and what are free radicals?

A. Well, I think we first have to talk about what is oxidation. And that is, to put it in simple terms, when a car rusts in a junkyard, that's forming iron oxide from the heat of the sun. Oxygen has a couple of loose electrons on its outer ring which can be dislodged by heat or radiation. And this happens in

the physical world, and it also can happen in our bodies.

If you leave a package of potato chips out in the sun in the back of your car, they will oxidize, and when you come back and smell the potato chips, they won't smell right because the fat has been modified.

So oxygen radicals can damage carbohydrate, protein and fat.

When you don't water a house plant, sometimes the leaves get brown at the tips. That's oxidation. Because air is 20 percent oxygen. The air we breathe is 20 percent oxygen.

So the plants have antioxidants that are usually colorful that they develop to protect themselves from the oxygen in the atmosphere, and humans have a number of defense mechanisms as well. Many of these mechanisms break down with aging. And we produce oxygen radicals inside our body as part of normal metabolism. We break down food to make energy. The friction in that system is oxygen radicals.

And then inflammation, which is a good thing when you're fighting infection, is often excessive in people who are overweight or obese. People who have diabetes and other conditions have excessive inflammation. And inflammation itself causes

oxidation.

In cancer, one of the key mechanisms in the promotion of cancer is free radicals.

In heart disease, one of the key mechanisms for the cellular basis of atherosclerosis is free radicals.

So it's very important -- and also for many other diseases I didn't mention, including inflammation in the brain, inflammation of the skin even, so that it's very important that we ingest a certain amount of antioxidants to protect against this and that these antioxidants also have anti-inflammatory activities which have real implications for human health, both in the area of aging, cancer, mental function, heart disease, and so forth.

Q. Okay. Let's talk about the specific areas of heart, prostate and erectile dysfunction and the studies that were done there.

What were -- what were the earliest heart studies on pomegranate juice?

A. Well, I would say the earliest heart studies on pomegranate were carried out by Dr. Aviram at the Technion Institute in Israel.

Q. Before you describe those, what can you tell us about Dr. Aviram?

A. Well, Dr. Aviram is well-recognized as a

pioneer in the area of oxidant stress and antioxidant research as it relates to heart disease. He is internationally known and works at a very fine institution where there have been several Nobel prizes awarded, a very highly regarded institution.

And Dr. Aviram is an energetic worker who got into this field really before any involvement with pomegranate looking at a number of antioxidants from plants, be it lycopene from tomatoes, green tea, citrus fruits and then red wine. And he was actually involved in red wine prior to doing his research on pomegranate and has often told me directly that the pomegranate was more potent as an antioxidant than red wine, which really made him shift his whole laboratory effort toward the effects of pomegranate and untangling its many interesting effects on heart disease.

Q. And what kind of studies did he do? Let's start at the beginning with his studies and just outline them. You don't have to give us every study.

A. Sure. Well, you know, the -- if I was here thirty years ago and talking about heart disease, I would tell you that it's like a stiff plastic pipe and you just fill it with Silly Putty and the Silly Putty would fill the pipe and block the blood flow, but that's not our understanding today.

Today we understand that it is the rupture of an inflamed plaque which covers about 50 percent of the lumen of a coronary vessel that suddenly ruptures. And the most common time for heart attacks is 9:00 in the morning on a Monday because Monday is the most stressful day of the week, and 9:00 a.m. is when platelets, the little cells that clause clotting, are most sticky.

So if you are going to have a heart attack or you feel you are, they recommend you put -- we recommend you put aspirin under your tongue to counteract the blood clot, and on the way to the hospital the paramedics will give you injections of enzymes which break up blood clots which try to restore the blood flow into the heart.

So this plaque is the end result of decades of damage to the blood vessel, and it begins with oxidation. Just as I described the potato chips or the rusting car, this is oxidation of cholesterol which circulates in your blood on a protein called LDL. When that protein has these cholesterol particles on it and they get oxidized, it changes the chemical nature of the protein, so it tends to reside in the wall of the blood vessel, where it accumulates. Regular cholesterol passes in and out, but the oxidized cholesterol resides

there.

Another group of cells that I always characterize as kind of Pac-Man cells, these macrophages, come in and they eat up this oxidized cholesterol. And they have a ravenous appetite which doesn't stop, and they continue to accumulate these until they become what's called foam cells where they're full of cholesterol and they actually burst into the area, bringing in more cells and more inflammation.

So we basically have oxidation followed by inflammation followed by damage to the interior of the blood vessel. And this is detected as yellow streaks in the coronary arteries. Even in adolescents, in teen years, we can detect yellow streaks of cholesterol. And as this progresses, you form what's called plaque, which begins to fill those lumen.

And that plaque can have different characteristics. It can be stable or unstable. And unstable plaque is full of oxidized cholesterol and macrophages, reft with inflammation. And by blocking that inflammation and blocking that oxidation one could stabilize that plaque.

So Dr. Aviram started with those macrophages, those little Pac-Men, and he looked -- he knew that

pomegranate could inhibit the oxidation of cholesterol from very basic test tube studies, but now he looked at those macrophages and noticed that the pomegranate juice constituents could inhibit the uptake of that oxidized cholesterol into the macrophage. And he's followed that up with many more studies.

The other cell studies that he did was -- there's something called good cholesterol or HDL cholesterol. That contains an enzyme which is an antioxidant enzyme, a protein that acts to protect you against oxygen radicals, and it's called paraoxonase. And what he has shown is that the pomegranate benefits the activity of paraoxonase by increasing its binding to this good cholesterol protein called HDL cholesterol.

So he's been a real pioneer, has written many review articles in this area, and extended those basic studies.

And I believe Dr. Liker mentioned this morning a specific mouse called the apoE knockout mouse.

Q. Why do they call it a knockout mouse?

A. Because the apoE is a protein that transports cholesterol in the body and other lipids, and this animal is -- they inactivate that gene, and there are ways when you cross animals to take an animal that's

missing that gene and get a specific strain of mice that is missing that apoE.

Mice tend to handle cholesterol differently than the human, but this model is well-established in the cardiology literature as a model for plaque stabilization, so if something stabilizes plaque, as pomegranate juice does -- and there are some other examples of other extracts of plants that will do this, and drugs do this as well, such as cholesterol-lowering drugs -- they stabilize the plaque or prevent its formation in this animal model, and it's the perfect model in which to study that.

And Dr. Aviram showed that pomegranate juice fed to that animal -- so they drink it in their drinking water. Then they take out the aorta and look at these things, and they actually inhibit the formation of that plaque, so it's a fairly convincing mechanistic study.

Q. Now, did Dr. Aviram also do human studies?

A. Yes, he did.

One -- he's done many human studies, but one of the most interesting studies was in patients who had a disease called carotid artery stenosis.

Now, the carotid arteries are two pipelike arteries that go up in your neck, and it's a good thing

to have both of them because sometimes one of them gets blocked and blood flow is picked up by the other side. And people who get a stenosis, have more than a 50 percent blockage of this, actually undergo an operation where that is removed and a graft is placed for the carotid artery. This is called carotid endarterectomy, is the name of the procedure.

And it was originally thought that these carotid lesions in the carotid arteries were a risk factor for stroke, and it would just make sense. These blood vessels are feeding the brain, so it would be a risk for stroke. Subsequently it was found that these are actually a risk for heart disease.

And so in Dr. Aviram's study, he gave patients with carotid artery stenosis, who had an accumulation of this plaque, pomegranate juice over a period of several years. And what he found was a 30 percent reduction in the plaque. And in the group that took the placebo, they actually had a 9 percent increase.

And it was a relatively small study, but sometimes small studies can be more informative than large studies. And in this case, because the patients had this piece of artery removed, Dr. Aviram was able to study that piece of artery, and he found that there was less oxidized LDL cholesterol in that plaque that he

analyzed, demonstrating some of the antioxidant effects of pomegranate juice that he had shown in the cellular studies now in a piece of tissue from a human, so that's very important evidence.

Q. Is it correct that Dr. Aviram sent his material to an institution in the United States, an independent institution to be checked?

A. Yes. And --

Q. Did they verify his result?

A. That's correct.

Q. And that's the 39 percent comparative improvement to the pomegranate juice over the placebo juice?

A. The relative improvement if one considers both what happened in the placebo group and in the treated group.

JUDGE CHAPPELL: Do you know if these people were -- who had this blockage were taking a statin drug, or did they forgo that to be part of the study?

THE WITNESS: These -- I would have to -- I would have to look at the paper, but I'm fairly sure that these people may already have been on statins at the time that this study was done because statins had been available since the 1980s and it would probably be standard of practice. I think the cholesterol levels in

these people were also elevated, so I believe they probably would have been on statins, but I'd have to check the paper because it was done in Israel and I'm not sure what the standard of practice would be.

MR. FIELDS: I think His Honor's question went to did they continue taking statins during the test so that the statins --

THE WITNESS: I think they certainly continued whatever other medications they were on.

JUDGE CHAPPELL: So whatever the baseline was, 20 milligram Lipitor, whatever, they would stay on that --

THE WITNESS: Yes.

JUDGE CHAPPELL: -- so that you don't have that transferring over into what the pomegranate may or may not be doing.

THE WITNESS: Correct.

BY MR. FIELDS:

Q. And the placebo group doing the same thing got worse by 9 percent; is that correct?

A. That's correct.

Q. Now, who is Dr. Louis Ignarro?

A. Dr. Louis Ignarro is a professor of pharmacology who is one of the three recipients of the Nobel Prize in medicine and physiology in 1998 for the discovery of

nitric oxide. And he has been a faculty member at UCLA for, oh, over thirty years.

Q. And has Dr. Ignarro done any studies of the effect of pomegranate juice in enhancing the effect of nitric oxide?

A. Yes.

Nitric oxide is produced by the cells lining the heart blood vessels and by the cells lining the blood vessels of many organs around the body. In fact, most of our blood volume is carried in little microscopic arteries that would be in the tip of the finger. And these tiny arteries may just be a single cell thick, but that single cell will produce nitric oxide. And it makes the nitric oxide, which is a gas, from an amino acid, which is part of protein, called arginine.

And when Dr. Ignarro first discovered this, people thought there was a hormone called relaxin which would relax the blood vessel. And nitric oxide by its nature -- it's just one nitrogen atom and an oxygen atom -- is very unstable, so he mixed it with a gas called argon, which is neutral, and stabilized the nitric oxide, bubbled it into a little dish with a cow artery in it, and the cow artery relaxed.

And no one in the world had thought that this

factor would be a gas, but in fact it's this gas nitric oxide that's made by these little endothelial cells, circulates for a very short period of time and then goes away.

It is also the basis of nitroglycerin. It turns out that -- the Nobel Prize of course is named after Alfred Nobel. And his workers in the dynamite factory who had heart disease found out that their heart disease was better during the day when they were making dynamite than when they went home at night, and this was the basis of nitroglycerin being developed.

And when I was in medical school 35-40 years ago, we didn't know why nitroglycerin worked. No one ever knew. And it was this discovery of nitric oxide that really clarified for us how blood vessels controlled their filling and blood flow in the heart and other organs.

Now, when he put in pomegranate extract into his system of cells that make nitric oxide, he found that it was the most remarkable preserver of nitric oxide, that is, to enhance its activity, that he had ever seen. It was something like 5,000 times more potent than the other antioxidants that he was testing.

So antioxidants can increase the life span of nitric oxide in these tiny vessels and have a beneficial

effect on blood flow.

Q. And does that blood flow that's improved by nitric oxide which in turn is enhanced by the antioxidants in pomegranate juice, does that blood flow apply to organs beside the heart?

A. Yes. Every area of the heart receives flow from at least two sources, so there's always a backup.

Now, I mentioned that a heart attack occurs because of the very sudden blockage of a blood vessel and the heart cannot adapt. But if you slowly decrease blood flow, the heart grows other blood vessels into the area of low oxygen to provide blood flow to that endangered area. And nitric oxide opens up those tiny blood vessels and helps to preserve blood flow in the heart.

Q. What other organs other than the heart are affected by nitric oxide and --

A. Well, perhaps the most famous one -- and Dr. Ignarro is often embarrassed about this. He says, If my mother were alive, she'd be upset that my discovery was being used for this, but it's certainly for erectile dysfunction. He is often embarrassed about that but a very important area, where arteriosclerosis is often a combination of problems that can occur that can cause reversible erectile

dysfunction, and the drugs that are out there now for erectile dysfunction are based on their ability to enhance the half-life or the survival of nitric oxide in the penis, and so --

Q. And pomegranate juice does that as well, although --

A. Pomegranate juice in cell culture does that as well.

And in animal model, Dr. Azadzoi worked on a rabbit model where he occluded some of the arterial blood flow in the penis of these rabbits, a model of what goes on in a man who had atherosclerosis of the penile artery. Often these men have diabetes and heart problems as well. And in that model he was able to show that pomegranate juice enhanced that blood flow.

Now, in humans it's much harder to measure that.

Q. Well, we're going to have testimony --

A. Sure.

Q. -- on erectile dysfunction and the effect of nitric oxide, but I just want to know in general, nitric oxide -- and correct me if I'm wrong -- affects blood flow to just about every organ in the body.

A. Yes, that's correct.

Q. And that would include, for example, blood to

the brain?

A. Yes.

Q. So it might affect strokes and how they happen?

A. Well, I think in general, blood flow is regulated by nitric oxide in terms of the microcirculation of many organs around the body, the kidney, the liver, et cetera. And it's one of the -- it was the molecule of the year I think in the year 2000, it was on the cover of Science magazine, so this is one of those discoveries that has reverberated throughout the scientific literature in many, many biological fields.

Q. Okay. Now, who is Dr. Dean Ornish?

A. Dean is a pioneer in cardiovascular health and human wellness. He is one of the most influential people in the world in this regard. He did a landmark study showing that the effects of lifestyle on heart health and is widely published, continues to do research. He's a faculty member at the University of California San Francisco and is the director of the Preventive Medicine Research Institute there.

Q. Now, did Dr. Ornish do a study of the effect of pomegranate juice on myocardial perfusion?

A. Yes, he did.

Q. And would you -- that's blood flow to the

heart?

A. Yes, it is.

Q. And if we don't have blood flow to the heart, we die; is that correct?

A. Well, if you have a sudden -- this study was done in people with heart disease, and certainly the ability to increase myocardial perfusion, which we can now measure with certain kinds of scans that look at the blood flow in real time, in live people, you can see an increase in blood perfusion. And I would suspect, based on my research and the research of Dr. Ignarro and others, that this opening of these tiny blood vessels and increase in perfusion is entirely consistent with the known biological effects of nitric oxide.

Q. Now, was Dr. Ornish's study an RCT study?

A. Yes, it was.

Q. Okay. And what was the result of Dr. Ornish's study?

A. Well, in Dr. Ornish's study he showed a statistically significant increase in perfusion. I believe it was about 18 percent increase in perfusion.

Q. Well, wasn't it 18 percent increase in perfusion to the pomegranate group but a 17 percent worsening to the placebo group?

A. That's correct.

So I guess relatively, if you're going to compare the two, the relative difference was 35 percent.

Q. So it had a 35 percent benefit to -- comparatively to the placebo group from taking pomegranate juice.

A. That's correct.

Q. And the benefit was improved blood flow to the heart.

A. Correct.

Q. Okay. And of course -- well, I shouldn't say "of course."

And is that something that indicates that pomegranate juice would be likely to reduce the risk of heart problems?

A. It definitely would reduce the risk of a problem, because if one had -- and you know, sometimes people get a blockage of a minor blood vessel, for example, for a heart attack, not a major blood vessel.

If you were to occlude one of the largest blood vessels, it would still provide some increased chance of recovery because you'd have better blood flow to the rest of the hospital report.

In the case where a small one is blocked, it

might provide the time you needed to have a stent put into that artery at a hospital or allow you to survive the ride in the ambulance.

So I think that anything you can do to increase myocardial perfusion definitely would improve heart health.

Q. Okay. Now, there was some talk in the last session we had here about the word "surrogate."

Is it correct that a surrogate is something that is a predictor of the likelihood that you're going to have a disease or that the disease will get worse or death from a disease?

A. Yes. A surrogate is either a sign or a symptom that is associated along the pathway to a disease.

So while the FDA for the -- the Food and Drug Administration for the purposes of drug registration and testing only accepts a limited number of these surrogate markers, and for heart disease they accept cholesterol and blood pressure, the number of indicators that physicians and scientists use are much greater and can be at many points along the pathway of heart disease or for that matter prostate cancer.

So clinical decisions are made, the health of the patient is assessed and certain procedures are undertaken based on things that are surrogate markers

but may not be officially accepted by the Food and Drug Administration.

Q. And is it correct that you as doctors want a surrogate marker to be something as closely related as possible to the actual disease?

A. That's correct.

For example, let's say we were to restrict ourselves to cholesterol alone. There are many cases -- and I remember, we had one cantankerous faculty member at UCLA who had a cholesterol of 312, and she was quite independent and refused to do anything about it, never had heart disease.

So there are people with very high cholesterol who don't have heart disease, people with low cholesterol who do. And about 50 percent of the people who die with a heart attack actually have a cholesterol in the normal range.

So when you have a biomarker like cholesterol which increases your risk, that's very distal or far away from the actual event of a heart attack which may be affected by many other factors that we've discussed, such as inflammation and oxidation.

Q. We have a slight revision of the very oversimplified chart that we had at the last session.

Could we have that chart number 2, James.

It illustrates -- that's chart number 1. I want chart number 2. Chart number 1 we had last session and -- yeah, here we go.

It's the same chart as number 1, but it also shows the surrogates in issue. And as you can see -- and this was explained and we went through this with the experts for the FTC that, looking down the chain, LDL cholesterol oxidizes. Macrophages come in, as you've testified. They eat the oxidized LDL. Plaque comes and clogs the article -- artery, and as you said, either it breaks off or it stops and reduces it, and then you have a cardiovascular event.

Now, this illustrates the FDA-approved surrogate over in the left, LDL cholesterol. And as you can see, it's way down the chain from the actual event.

And as you've testified, Dr. Ornish and Dr. Aviram used the CIMT measurement, that is, the measurement of the carotid intima, and that is far closer and more directly related to the cardiovascular event than LDL cholesterol; isn't that correct?

A. Yes.

I would clarify that Dr. Aviram in his study had people with very significant amounts of plaque.

Q. Yeah.

A. And these individuals had thickened plaque,

whereas, in the study of -- by Dr. Davidson where he did the IMT measures, these patients had less plaque to the point where it was not significant. It didn't meet the definition of plaque, which is 1.5 millimeters, excluded anybody with a plaque above 2 millimeters.

Q. Right.

A. And so these two studies are really apples and oranges. They're not comparable.

Q. But they both used the same surrogate; isn't that correct?

A. They used the same surrogate in a different group of patients. And of course, myocardial perfusion is the closest to the actual event because that's what's affected acutely in a heart attack.

Q. Would it be fair to say then that if LDL cholesterol is approved as a surrogate as the FDA indicates that myocardial perfusion and CIMT measurement would almost logically and necessarily be good surrogates?

A. They would definitely be perhaps even better clinical surrogates because the LDL cholesterol is so early in the process that it really is a risk indicator. And many people who have normal cholesterol may be at high risk of heart disease; people with high cholesterol may not. They may have other issues going

on.

So the conclusions of the FDA are valid for cholesterol-lowering drugs where they've done studies in thousands and thousands of patients and seen a reduction, so I'm not advocating that no one take a cholesterol-lowering drug that needs to. What I am saying is that pomegranate may influence some of the processes along this pathway and including some of the processes very close to cardiovascular events.

Q. Yeah.

Is it correct Dr. Ornish did another study called Bev 2, I think it was called? Do you recall what that study was?

A. I only -- I had some very brief knowledge of that just from some discussions that were undertaken, but it was also an IMT study that was not completed, as I recall.

Q. Okay. What does the word "underpowered" mean?

A. Underpowered is a study in which the number of subjects in the study are inadequate prior to the study to predict a positive result. That is, one can do a theoretical calculation before starting a study based on the size of the expected change in the primary variable.

And let's say that you're looking for a

5 percent change versus a 20 percent change. You're going to need more people to see that 5 percent change, so you have to properly power the study -- it's also used as a verb -- to get the number of the people in there to show that result.

And so many times, especially for a drug study costing hundreds of millions of dollars, you're going to power that study appropriately so that you can get an answer of was it positive or not positive, and that is going to be powered in advance.

Q. And when you talk about the drug company getting the result that it's seeking, you're talking about it having statistical significance; is that correct?

A. That's correct.

Q. And by that you mean it has a p-value of .05 or less, which is -- is that the -- I didn't hear your answer.

A. That's correct.

Q. Okay. And is that the equivalent of a 95 percent probability of validity as opposed to just mere chance?

A. That's correct.

Q. So if I have -- and we'll -- there is one test we'll be talking about later that got .058.

Does that round off to about a 94 percent probability of being valid?

A. It does.

Q. Okay. And in your opinion, in studying the validity, the value of a study, do you disregard it if it doesn't reach statistical significance?

A. No. Absolutely not. There are many examples of genetic studies, for example, this often happens where we're looking at particular genes and we may not have reached a statistical significance in a particular study, but this would be very strong evidence to now go pursue that lead in a future study with a larger number of subjects.

Q. Would it be fair to say that it may have very, very important clinical significance even if it doesn't have statistical significance?

A. Yes, that would be fair to say.

Q. Okay. Now, let's turn to Dr. Davidson.

Dr. Sacks testified that Dr. Davidson was an excellent scientist.

Do you agree with that?

A. I do.

Q. Okay. Would you describe the study done by Dr. Davidson on CIMT.

A. Well, the intimal medial thickness is measured

by convention at a certain location in the carotid artery, not the same place where the plaque occurs but in a different spot, and has been used by a number of drug companies in looking at the activities of cholesterol-lowering drugs. And Dr. Davidson has a great deal of experience for this, and it's a very difficult measure.

And the patients in his study, they were at risk of heart disease based on their blood cholesterol levels and lipid levels, but they did not have carotid stenosis, so he specifically excluded from his study anyone with greater than 50 percent block of the carotid artery or an intimal medial thickness of greater than 2 millimeters.

Q. Did that mean that people with significant plaque were excluded?

A. Yes.

Q. And what was the average thickness of his patients in the study?

A. It was .85 millimeters.

Q. And is that about half of the minimum requirement to say somebody has plaque?

A. Yeah. The general definition of plaque is 1.5 millimeters.

Q. Okay. Now, is it correct that Dr. Davidson's

protocol called for measurements at both 12 and 18 months?

A. Yes, it is.

Q. And is it correct that there was a benefit at 12 months but not at 18 months?

A. That's correct.

Q. Okay. And as Dr. Sacks told us and -- well, I'll ask you.

Is it correct that not reaching a positive result on a study like that is not proof of the negative?

A. That's correct. I often tell my students that absence of evidence is not evidence of absence, so merely the fact that you haven't found something in a particular study just means you haven't found it yet. You may have to do more studies, but it doesn't prove the opposite.

Q. So if your hypothesis is not proved in a particular study, it doesn't mean your hypothesis is wrong; it just means you didn't prove it in that study.

A. That's correct.

Q. Okay. Now, you told us that there was a subgroup of people who were at risk based on their blood chemistry.

Was there a benefit shown by the study to that

subgroup?

A. Yes. In that subgroup, people had between a 4 and 9 percent improvement, depending on whether one looked at the anterior or posterior wall of the artery in terms of thickness. And this was a subgroup that had high triglycerides and low HDL cholesterol. As I mentioned earlier, the HDL cholesterol is the one that carries this antioxidant enzyme, so these were individuals with increased oxidant stress or exposed to increased oxidative stress.

And it's a large number of people in the United States. This is variously called metabolic syndrome where people have high triglyceride and low HDL and then they meet one other criteria like a large waist circumference, a high blood sugar, an intermediate range or high blood pressure.

But this group by having high triglyceride and low HDL was an indicative subgroup of that metabolic syndrome group that would be exposed to high oxidative stress, so it made some sense that this subgroup might have a benefit, so it was an interesting additional analysis that was done.

Q. Well, we had testimony in the last session that millions of people in the United States could be in that subgroup that got that recorded benefit.

A. I'd say that's an underestimate. I'd say it's tens of millions of people --

Q. Tens of millions.

A. -- tens of millions of people in the United States who would have that and be walking around and not knowing it at all. And this is -- you know, many people who have sudden death don't know that they have abnormal risk of heart disease and often on the basis of nutrition, given the status of our country's nutrition.

Q. Now, when you talk about 4 to 9 percent, that's on a comparative basis?

A. Yes.

Q. By that you mean the --

A. The placebo group worsened and the treatment group got better. Correct.

Q. Okay. Right. All right.

Is it a problem that Dr. Davidson's high-risk group, the one you've just talked about with the tens of millions of people in it, got a lower percentage of benefit than Dr. Aviram's group that got a 30 percent decrease in plaque?

A. I think that they're two different studies, so what you basically have are one group of patients who were ready for surgery to have their -- have very

significant disease and the other group where it was just at risk, so they're very, very different, so seeing a smaller result in the at-risk group than in the carotid artery stenosis group is not that surprising.

Q. And one was a plaque study and one was not; is --

A. Right. Let's just say they're not inconsistent, the two observations are not inconsistent.

Q. Okay. Now, there's been some reference to Dr. Davidson's subgroup as a post hoc analysis.

Does that disqualify it as scientific evidence?

A. No. That's actually pretty routine.

As a matter of fact, in the Women's Health Initiative, many of the findings were so-called post hoc analyses. And I believe that in many, many studies people often go back and look at the data in the two groups and try to find additional leads for future studies, generate additional information to clarify the findings of that study, so it's a thing that's routinely done.

Q. Do you have to wait before a subsequent study is done before you can publish or put out the information that you learn by a post hoc analysis?

A. No. Often the benefits to subgroups, both beneficial and adverse -- as a matter of fact, I think one is compelled to put in any adverse effects. Even if they occur in a way that one would not interpret as statistically significant, you would want to inform the public about any adverse effects. Say if you were studying a drug with an adverse effect and it occurred in a small number of subjects, you would be compelled to do that.

Similarly, if there's a potential benefit in this study, and it may be some time until the next study is done, you could definitely communicate that in your publication. And you know, if it's too speculative, then the reviewers will come back, the peer reviewers will come back and say, well, that's too speculative, you need to take out that language in your discussion. But often subgroup analyses are discussed and put forward.

JUDGE CHAPPELL: I have a question. I heard you talking about a study showing -- you were talking about variances in millimeters in arterial plaque.

What kind of technology or tests are being used to determine that level of precision?

THE WITNESS: Oh, yeah. These are very tough measures. It's actually an ultrasound that's -- and the

data from it is digital and is managed by a computer, so you're absolutely right. These are very, very tough studies, and they have to be done in a center that has significant experience.

When you look at these results, they come out with little decimal points, so Davidson's lab -- and I remember discussions at the NIH about using Davidson's lab for these studies because he's one -- there are a few labs, but he's one of the labs that's done a lot of these studies. And it is a very tough measure. This is a very tough one to do.

But the Aviram study was much more simple to understand because he actually got a piece of tissue out and looked at it; whereas, these things, you're looking at a certain segment of the artery and the carotid artery at a certain distance, and then you're taking a picture of it with ultrasound and then having a computer calculate for you what are the thicknesses between these two surfaces of the wall, so you're right, it's a very tough measurement.

BY MR. FIELDS:

Q. Is Dr. Ornish's myocardial perfusion that difficult to measure?

A. It's a little -- it's easier because basically what you're seeing there is flow of an indicator through

the heart, and you can visually see that, and then that image is put into a computer, so it's a lot simpler to see that.

Q. So Dr. Aviram's and Dr. Ornish's are easier than, for example, Dr. Davidson's.

A. Absolutely.

Q. Now, let's turn to the prostate.

How long have you been studying prostate cancer?

A. I've been studying prostate cancer for about 17 years.

Q. And approximately what percentage of men over 60 have prostate cancer?

A. Well, there are about 300,000 men diagnosed with prostate cancer every year, and about 30,000 die of the disease. It's the second leading cause of cancer death among men, and so it's extremely common. And many men in our society likely have microscopic prostate cancer that they don't know about, just as men might be walking around with cholesterol in their heart that they don't know about in arteries, so this is a very, very common disease.

Q. So men are walking around with microscopic prostate cancer they don't even know about.

A. That's correct.

Q. Right.

Is what we call PSA an indicator of prostate cancer?

A. Well, when the prostate is intact, about 50 percent of men after the age of 50 get an enlargement of the prostate gland called benign prostatic hyperplasia or BPH. That raises the PSA level, and often it -- the type of PSA you have and the level of elevation increases your risk, similar to blood cholesterol, so it's used as an indicator.

And so for men, if -- and they're age-adjusted levels, so a level of 3.5 might be normal in an 80-year-old man but might be a very alarming number to get in a 50-year-old man.

So what's often done is after that initial PSA, because the prostate is in place, you do a prostate biopsy and you look at that tissue and see if there are cancer cells there, and that makes the diagnosis.

However, once the diagnosis is made and you have treatment and that gland is removed, in most cases the PSA will drop to a very low or undetectable level. And if it now recurs and comes back, then there's no doubt that PSA is coming from prostate tumor cells because there's no prostate there anymore.

So when people talk about PSA not being a good

indicator of prostate cancer, that's in the case where the prostate gland is present. And it could be a very important indicator there because it would motivate the doctor to do the diagnostic study. But once the prostate is removed, there's absolutely no disagreement that that PSA is a marker of tumor growth.

Q. Okay. Let's talk about the studies that have been done for the effect of pomegranate juice on prostate cancer or on the prostate.

What are the initial studies that were done in that regard?

A. Well, the very first studies were actually done by Dr. Arie Belldegrun and his group in the urology department at UCLA a number of years ago in which they gave pomegranate juice to mice that had implanted human prostate tumor cells that were growing in the mouse. And there was a group that got regular drinking water, and there was a group that got pomegranate juice in their drinking water. In the group of mice that got the pomegranate juice, they had a shrinkage of their tumor. And these human tumors made PSA, and the PSA level in these animals also went down.

And that was done actually before I became associated with the Resnicks. And subsequent to that, I directed a National Cancer Institute-funded center

called Clinical Nutrition Research Unit. And Dr. Allan Pantuck was a young investigator in our clinical training program, and so knowing what I knew about the PSA situation, I gave him a pilot grant to study prostate cancer in men who would drink pomegranate juice at a window of opportunity when they had undergone removal of their prostate gland but their PSA had started to recur.

And what happens in that situation, that model of study, is you recruit patients who have a certain rate of rise of their PSA. Not all patients have this. In some patients PSA is very low and stable over a long time. But there are patients who have a rising PSA. And these patients are recruited and then serve as their own controls over time, so then use the experimental agent and look at the change in the rate of rise of that PSA.

And there are a number of ways to express that. For instance, one can look at the slope. Or one can look at the amount of time it takes for the PSA level to actually double, and that's called PSA doubling time. And the longer it takes to double, the slower those tumors are growing and the greater the benefit to the person.

And in Allan's study what was really remarkable

and -- is that the slope was reduced to about 35 percent, but the doubling time went from 15 months to 54 months, which is really an amazing result. And no one has ever seen anything like that with other nutrients. I mean, people have studied tomato juice or green tea. No one has seen this kind of effect. It's pretty remarkable.

So thinking about that, we went back and looked in cell culture and in animals with various prostate tumors derived from humans, and what we were able to show is that the substances from the pomegranate, both the ellagitannins that I mentioned and the urolithins, inhibit prostate cell growth. And when you take a mouse with this, and we repeated the studies done by Belldegrun and worked the same way, when the mouse drank the pomegranate juice, the tumors shrunk, the PSA levels went down, and we did this with a number of different tumors.

Q. Now, these were human --

A. Tumors.

Q. -- tumors.

A. Yeah, they're human tumor cells.

And I should say that UCLA is very fortunate in having one of the Specialized Programs of Research Excellence, so-called SPORE, S-P-O-R-E, programs, in

prostate cancer, of which I believe there are about eleven in the United States. And I work closely with them. We have a study with Dr. Aronson, who's a member of that, on fish oil in prostate cancer, so there's a lot of activity in this area.

And we were puzzled why this would happen. And knowing about the antioxidant effect of the pomegranate and the possibility of an anti-inflammatory effect, which we had shown in colon cancer cells, we went back to the cells with prostate cancer and lo and behold there was an anti-inflammatory effect.

Q. I didn't hear that.

A. Anti-inflammatory effect.

Q. Okay.

A. And there's one protein that normally mediates inflammation. And it has a long name. It's called nuclear factor kappa B. And Dr. David Baltimore got the Nobel Prize for its discovery. And it is activated whenever you have an inflammatory reaction, if you're infected or whatever, but when it persists, it can damage your body.

And one of the characteristics of cancer is persistent inflammation, and so if the NF-kappaB level is high for a long period of time, it promotes the development of new cancer cells.

And what we found was that in these animals we were able to show that when we took the tumor out of the animal and looked at that particular protein, pomegranate juice administration inhibited its activation, which was exactly what we had seen in cell culture, and we saw that in the animal model as well.

Q. And again, it was a human tumor --

A. Right.

Q. -- that had been put into the animal to study; is that --

A. Yes. It was human tumors in the cell culture in the test tube. It was human tumors in the animals.

And then I should say that in addition to Dr. Pantuck's study, there was another study done by Dr. Michael Carducci at Johns Hopkins University in which he had a different group of patients, and he didn't study pomegranate juice, but he studied the pomegranate extract capsules, which are made from pomegranate. And he used two different doses, a threefold difference. And on the overall, patients had an increase from about 11 months of doubling time to about 18 months, which was statistically significant.

So in both of these cases you had evidence of benefit on prostate cancer by a mechanism that we had

shown in the laboratory is pretty much accepted as an important component of the genesis of prostate cancer in men who may have microscopic cancer or in men -- and one that would advance prostate cancer as it progresses.

Now, what happens when the PSA level gets to a certain point is that the doctor will now introduce what they call androgen appellation therapy.

And I didn't mention this, but I am also a board-certified endocrinologist as well as internist, and so I've dealt a lot in and actually did my Ph.D. on reproductive endocrinology.

There are agents that were developed originally as contraceptives. And this particular protein is administered to men with prostate cancer and drops their androgen levels. It's a chemical castration, if you will. And this then causes a remission in the cancer when that PSA has gone to a certain level.

However, unfortunately, sometimes that reappears as what we call androgen-independent or castrate-resistant prostate cancer. And in the laboratory, we took human prostate cancers, put them in the mice, castrated the mice, and we were able to show that pomegranate juice inhibited that castrate-resistant growth.

So now we went back with the cells again, and now we found that the pomegranate chemicals inhibited the enzymes that make testosterone inside these cells.

So what happens is that in a man who's given these drugs, the blood level of testosterone is unmeasurable, but if you go inside the prostate cancer cell, it's making its own testosterone and it's about 50 percent of the normal male level, and that's what's allowing that cell to keep growing, so our ability to inhibit that with pomegranate juice phytochemicals is a very significant finding. And we were able to show that we could prevent the emergence of castrate-resistant prostate cancer in these mice following castration if they had pomegranate juice but not if they had regular drinking water.

Q. Now, as you've indicated -- and correct me if you disagree -- the basic science and the studies you've shown indicate that even with men who have not yet been diagnosed, who may have microscopic cancer, as so many men do, it is likely that the pomegranate juice will inhibit, not necessarily stop, but inhibit or delay the clinical functioning and the development of these microscopic cells.

A. Yeah. The process of carcinogenesis for the prostate and the breast and for many other tissues in

the body is a multistep process, and it is now recognized that inflammation plays a key role in moving that process ahead.

So you start with a few cells that become abnormal due to mutations in their gene material, and then some of those cells start to grow into cancer cells. And when they get to a certain point, you can diagnose microscopic cancer. And then if they get to a larger point, you diagnose clinical cancer. And that process is believed to be influenced by inflammation, the very same mechanism that we were able to study.

Now, we couldn't study it in men with microscopic cancer because it would take tens of thousands of men studied over a twenty to thirty-year period to show prevention of the emergence of clinical prostate cancer in men with microscopic disease. But with men who have rising PSA we got that answer a lot more quickly. It was a window of opportunity to ask the question. And then in the animal and the cell studies we said okay, we've seen this, why is this happening, and now we've found that this inhibition of inflammation is at least a big part of the story.

Q. Now, is PSA doubling time widely accepted now as a surrogate?

A. I think among most clinical urologists they do

accept PSA doubling time as an important surrogate.

Q. Okay. And that is a surrogate for recurrence or death?

A. Well, it's also -- it also motivates clinical decision-making in terms of, first of all, the diagnosis of prostate cancer and sometimes the initiation of therapy at later stages.

Q. One of the things that was discussed in the last section was the concept of blinding. And some studies are blinded; some studies are not blinded. There's one term called "double-blinding" which means that both the doctor and the participants are blinded.

And one of the FTC's experts in answer to a question -- I think it was a question from the court -- actually said that blinding the doctor was more important than blinding the participant, the patient.

Do you agree with that?

A. No. I think -- I think that blinding is most important in studies that don't involve physiological markers.

For example, if you have a study on happiness or you have a study on mood or appetite, it's very important that people are blinded so that the reaction of the physician doesn't influence the patient and vice versa. But I can't think of how one might

influence the rise in PSA level through blinding, so I don't think that when you have an outcome like PSA doubling time that blinding the doctor is more important than blinding the patient. I think the -- it's quite the opposite.

Q. So where you need blinding, it's more important to blind the patient; is that what --

A. Yes.

We've had the experience -- for example, early on when we did studies of soy protein, we had a urinary marker of isoflavone, and we found that some men in the study didn't take what they were supposed to take and some men in the control group started to take what they weren't supposed to take, so it's often important to blind the participants to what they're getting, whether it be placebo or active.

Q. Now, you said blinding was important where you have a subjective thing like happiness or I assume pain?

A. Correct.

Q. Is it -- does blinding have anything to do with -- well, you already said not with your PSA level.

Does blinding have anything to do with your level of plaque in your artery?

A. No.

Q. Now, let's talk very briefly about erectile dysfunction because we're going to have experts in that field testify.

What were the studies that were done on the erectile dysfunction and the effect of pomegranate juice on them?

A. Well, there was a randomized controlled trial done by Dr. Forest in men who had erectile dysfunction. And before that, I mentioned the study that was done in the rabbit model and, in addition, the implication of Dr. Ignarro's basic science studies showing that pomegranate lengthened the life span of nitric oxide, which is the key actor in erectile dysfunction that is remediable.

So if you have a remediable case of erectile dysfunction, lengthening the time of survival of the nitric oxide relaxes smooth muscles and allows the penile erection to occur.

Q. And were there both in vitro and animal studies before the human study?

A. Yes.

Q. And did they show a positive effect for pomegranate juice on erectile function?

A. That's correct.

Q. All right. Now, sometimes we've referred to the

human study on erectile dysfunction as the Forest study and sometimes the Padma-Nathan study.

A. Yes.

Q. Were both doctors involved in that?

A. Yes. I believe so. I believe at our annual summit meetings or -- that that study was presented, and I believe Dr. Padma-Nathan was involved in those discussions, and certainly he would be the leading author. Often -- it's not unusual to have authors who are Ph.D. or nurses even as -- I have two faculty from the nursing school in the Center for Human Nutrition, as a matter of fact.

So it's not unusual to have a nurse practitioner involved in a study. And who's first author is often the person who's done the day-to-day work, and the senior author is the one who supervised it and understands all the ins and outs, has the most experience, and is what we call the senior investigator.

Q. And is Dr. Padma-Nathan a man of repute in the field of urology?

A. Yes. That's correct.

Q. Okay. And is it correct that this was an RCT?

A. Yes.

Q. And did it show a positive result for

pomegranate juice?

A. Well, this gets into the discussion that we had about .058 versus .05 as an arbitrary cutoff. And you know, if this was a drug registration trial for pomegranate juice, then that clinical trial would be classified as a negative. But this is research that is not for -- in the pathway of a drug registration. This was the first attempt in humans to really look for this effect. And one might see it in a larger number. If you had studied a larger number of patients, you might very well move that additional .08 over.

So I would not call it a study that could be disregarded. I would say that it is a positive in providing important scientific information consistent with the basic science that pomegranate juice may be helpful for men with erectile dysfunction.

Q. All right.

JUDGE CHAPPELL: Let's take a break here. We'll reconvene at 4:00 p.m.

(Recess)

JUDGE CHAPPELL: Back on the record Docket 9344.

Next question.

MR. FIELDS: Thank you, Your Honor.

BY MR. FIELDS:

Q. Dr. Heber, in your opinion, is POMx the

equivalent of POM, the pomegranate juice, in providing health benefits?

A. Yes. I base that assessment on our basic studies which have all focused on the hydrolyzable tannins family, especially punicalagin and ellagitannins, and those are contained in the pomegranate extract capsule and account for the biological effects that we've seen.

As a matter of fact, I described those prostate cancer studies in animals, and when we gave animals the pomegranate extract, we got the same response that you get with pomegranate juice.

Q. Okay. And Dr. Carducci's study, as you said, at Johns Hopkins was POMx?

A. That's correct. And that's another example in humans where we get a similar result with POMx versus POM juice.

Q. All right. Now, isn't it correct that there have been some studies that have indicated or claimed that some antioxidants may not be as effective as claimed?

A. Those -- there are well-publicized studies that claim that antioxidants don't work or that people taking antioxidants have shorter life span, et cetera. These large studies have not been about this antioxidant.

They've been about vitamin C and vitamin E supplements. And they often were gathered together from studies of cholesterol-lowering drugs in which the control group often got vitamin C and vitamin E as a kind of placebo situation, and people have taken those different studies and compiled them into larger studies and come up with conclusions. But that type of meta-analysis is really difficult to conclude from.

And the word "antioxidant" I would say is an umbrella term. Many things are antioxidants based on their chemical structure. But the -- and I wrote an article on this some years ago, I believe about 2004, titled Phytochemicals Beyond Antioxidation. And many antioxidants also inhibit inflammation, but not all of them. It might be an antioxidant in the test tube but then not actually act on cells in the same way that pomegranate polyphenols do, so I think that in this particular case it is a specific antioxidant we're talking about rather than antioxidants in general.

Q. Okay. So it is your opinion and the opinion of many others I take it that the kind of antioxidant you're talking about is effective in the ways that you have told us.

A. That's correct.

Q. Okay.

JUDGE CHAPPELL: Does this antioxidant occur beyond pomegranate juice?

THE WITNESS: The tannin family occurs in walnuts.

JUDGE CHAPPELL: Is that tannin like as in tea?

THE WITNESS: T-A-N-N-I-N.

They're called tannins because they bind to proteins in cell culture. They -- but the punicalagin and this family in terms of fruits is unique to the pomegranate, so it's really a unique fruit in that regard.

And so it has that taste -- when you drink pomegranate juice, it has that tannin taste.

Now, tannins are also found in red wine, for example, in dark red wines. The tannins often polymerize, and these are the solids that come out in red wine, so it does occur in some other places. The tannin family is not unique to the pomegranate.

JUDGE CHAPPELL: Tea leaves?

THE WITNESS: No. They have -- we actually have about twenty papers on green tea. They have green tea polyphenols which are called catechins, C-A-T-E-C-H-I-N-S, and they're a family around something called epigallocatechin gallate. If you don't get all of that, that's okay. EGCG. And this is a large

polyphenol, but it acts differently than pomegranate, so this pomegranate is fairly unique in our experience working with plant-based antioxidants.

JUDGE CHAPPELL: So is the one in pomegranate something that can be synthesized in a lab and put, say, in chewing gum or a Life Saver?

THE WITNESS: No, you could not synthesize -- this molecule is a thousand molecular weight, a huge kind of chicken wire structure. It would be hard for a chemist to do that.

The birth control pills were actually designed from a substance found in Mexican yam called diosgenin back in 1948, and they just did chemistry around the edges because there was no way they could synthesize that big chemical in the Mexican yam.

So that this chemical could not be imitated by synthetic chemicals. It's really unique to the pomegranate, and extracting it from the pomegranate would be the way to get it.

BY MR. FIELDS:

Q. Okay?

Okay. All right. You -- in talking about the high-risk group in Dr. Davidson's study, the group that was benefited and to an -- even a statistical significance, you used the term "metabolic syndrome."

Were you saying that necessarily the people with metabolic syndrome got this benefit?

A. No. "Metabolic syndrome" is kind of an umbrella term, probably affects 50 percent of people between the ages of 45 and 65, and that is anyone with three of the five criteria, such as increased waist circumference, high blood sugar, high blood pressure, high triglycerides and low HDL.

However, in our own studies of obese populations we find that the high triglyceride is the most sensitive index of increased oxidative stress, so this high triglyceride/low HDL population would make sense as the one that would have increased oxidative stress and would benefit from pomegranate juice.

Q. And those are the high-risk people, not --

A. Correct.

Q. -- necessarily the metabolic syndrome people.

A. Right. Metabolic syndrome would be a much larger group, but still if you just look at the people with high triglyceride, you're talking about tens of millions of people in the United States.

Q. Okay. Now, you talked about a 4 to 9 percent comparative benefit, and complaint counsel has talked about lower numbers. I think it was something to 5 percent.

If you have a 5 percent improvement in something as serious as the things we're talking about and it affected tens of millions of people in the United States, would that 5 percent be too small to consider or would it be something very important?

A. It could be very important. Especially if the -- there are no toxicities associated with it, this could be a very important finding.

Q. And if a drug company had a 5 percent improvement in something that affected this many people in this dramatic a way, would they go out and get a patent and make billions from it?

A. I'm certain they would. Yeah.

Q. Thank you.

Let's come back a little bit to safety. I won't go back into the biblical times and no report. But in all of the clinical studies done by respondents, do you know of anyone being harmed by pomegranate products?

A. No. The Carducci study reported mild diarrhea in a small percentage of patients, but it wasn't of any significance.

Q. Mild diarrhea?

A. Which you see in lots of -- lots of studies. That was the only -- that was the only side effect I'm

aware of.

Q. Okay. And that was not everybody.

A. No, no, no. It was something like 8 percent of the subjects.

Q. You don't even know that that was caused by --

A. Absolutely not. You have to -- when you do a clinical study, you report all occurrences. Whether it's a person got a common cold during the study or whatever it might be, that gets reported.

Q. Okay. Putting aside some people that had mild diarrhea, in all of these different studies have there been any report of any material harm?

A. None.

Q. Okay. And were there actually safety studies or at least one study that was just on safety?

A. Yeah. I was involved in a study with what's called a clinical research organization in San Diego California called Accelovance. And they did a study in normal individuals of the POMx capsule, and there were no changes in blood levels of the routine things that people check for drug safety. Liver tests, and so forth, all were normal.

Q. Okay. Have you -- are you familiar with the FDA's list of generally accepted safe substances? I think it's called --

A. I think you're --

Q. -- substances that are generally accepted as safe.

A. I think you're talking about generally regarded as safe, which is the GRAS definition. And this requires a review of the scientific literature, a review of traditional intake of the substance. And I am aware that pomegranate is on the list of generally recognized as safe substances, as is --

Q. In your opinion, are both POM and POMx completely safe?

A. Yes.

JUDGE CHAPPELL: Hold it. You interrupted him.

THE WITNESS: I'm sorry. I meant to say that both pomegranate juice and pomegranate extract are generally regarded as safe.

BY MR. FIELDS:

Q. I'm sorry. Okay. I think my question was -- I've forgotten what my question was.

A. It was that same thing.

Q. Yeah. Okay. I'm sure it wasn't important.

Is there any special risk to diabetics from POM products?

A. Well, as an endocrinologist who treats diabetics, the intake of calories is very, very

important, whether those calories come from sugar or from fat.

Now, it's true that the pomegranate juice naturally contains glucose and fructose in about a one-to-one proportion, which is similar to what is found in table sugar, and it's found in -- these types of sugars are found in many fruit juices.

Now, glucose raises blood sugar. Fructose does not raise blood sugar, so fructose has what's called a zero glycemic index, whereas glucose has a glycemic index of 100, as does a white potato. These things will raise blood sugar levels.

Blood sugar is of particular concern for type 2 diabetics. This is the most common type of diabetes.

However, if someone has a high-fat salad dressing and a fatty meal the night before they come into our center, their blood sugar will go up the same as it would if they had a large amount of sugar.

So I don't think that a fruit juice in particular has a risk for type 2 diabetes, as long as the overall diet has the proper what they call glycemic load. That is, a low glycemic index food is basically a fruit or vegetable, and the overall diet is where the information exists, not in the glycemic index of any

single food, so it's wrong to say that a particular food is not safe because it has a high glycemic index.

Now, the glycemic index of pomegranate juice is actually 50, whereas table sugar would be 100, and so that's a midlevel glycemic index for pomegranate juice which has glucose and fructose in it.

Q. Well, then coming back to my question, is it your opinion that pomegranate juice is not unsafe for diabetics?

A. I think it would be the same. It would not be unsafe and would be similar to any other fruit juice that they might take.

Q. Like orange juice or --

A. Sure.

Q. -- any other kind of fruit juice.

A. That's correct.

Q. Now, what does it mean in the world of scientific research that a scientific study has proven something?

A. Well, it means that for that particular study, for those subjects that you recruited, the average change was statistically significant. But it doesn't mean that everyone in that study necessarily benefited from whatever you were trying to prove in that study.

So it is possible that in a given study you

could have a significant result and some people would benefit and some would not.

Q. As long as the average person in the study benefited, then scientists say this study proved X.

A. That's correct.

Q. Okay. All right. We're winding up.

In your opinion, Doctor, is there competent and reliable evidence showing that POM and POMx are likely to lessen the risk of cardiovascular disease?

A. Yes.

Q. All right. In your opinion, is there competent and reliable science showing that the POM and POMx are likely to lessen the risk of erectile disease and enhance erectile function?

A. Yes.

Q. In your opinion, is there competent and reliable science showing that POM and POMx lengthens the PSA doubling time for men who have had prostate cancer?

A. Yes.

Q. All right. And in your opinion, is this likely for those men to have a deferred recurrence or death from that disease?

A. Yes.

Q. Okay. Now, in your opinion, is there competent

and reliable science showing that POMx and POM are likely to lower the risk of prostate problems for men who have not yet been diagnosed with prostate cancer?

A. Yes.

MR. FIELDS: All right. That's all I have.

JUDGE CHAPPELL: Cross?

MS. EVANS: Thank you, sir.

(Pause in the proceedings.)

Good afternoon, Your Honor.

- - - - -

CROSS-EXAMINATION

BY MS. EVANS:

Q. And Dr. Heber, it is lovely to see you again.

Now, you were talking on direct about your relationship with the respondents, and I just wanted to ask you a little bit about -- more about that.

And you said that you started your relationship with them in about 2002?

A. That's correct.

Q. Yes.

And in fact, in their original contact with you, did they envision that you would be a spokesperson for POM Wonderful?

A. No.

Actually what happened was I was contacted --

I've forgotten his name now, but somebody from a supplement company called me, and there was an e-mail in which I did agree that I would be happy to do some public information with regard to pomegranate should the science go to that point. This was the very first introduction before I had met the Resnicks in regard to pomegranate. I had known the Resnicks before that of course, but that was the first with them in terms of this research.

Q. But this --

A. Yes. Excuse me. That was Bob Garrison -- I just remembered the name -- who I had known for a number of years in the supplement industry, who called me and asked if I would prepare a paragraph that he could then present to the Resnicks, so that was the context of that e-mail.

Q. And did Mr. Garrison ask you to help them, help the Resnicks by including discussion of pomegranates in your speeches?

A. No. That was actually my own recommendation as an initial introduction because I had not been involved in research with them before.

Q. Okay. Thank you.

And services -- you've provided a variety of services to the respondents' organizations over the

years; correct?

A. Pardon?

Q. You've provided a variety of services to the respondents' organizations over the years; is that correct?

A. By that you mean entities within the Resnicks' family of -- yes. I've done research for Fiji Water, for example. And I've also done research or my group has done research on pistachios and lipids. That's correct.

Q. And you've done studies looking at the potential benefits of POM Wonderful 100 percent pomegranate juice and POMx and POMxl, some of which are published and some of which are not.

A. That's correct.

Q. And you've conducted more than a dozen animal and in vitro studies on the respondents' various pomegranate products?

A. Yes, that's correct.

Q. Okay. And you've also conducted research that compared the respondents' pomegranate juice with competitive products, that is, products manufactured by other entities?

A. We did conduct one study in which we looked at the antioxidant potency of available over-the-counter or

market-available refrigerated juices. And we also conducted a study on pomegranate adulteration by other manufacturers in which we used some of our sophisticated chemical techniques to reveal the fact that a number of manufacturers were adulterating pomegranate juice and selling it as pomegranate juice.

Q. And you say in your expert report that over -- that you have received both grants and awards from the Resnick organizations?

A. That's not correct. I've not personally received these. These are university grants and contracts and also unrestricted gifts given to the university.

Q. Now, in order to line up funding for the university, for the work that you did for the respondents, have you from time to time proposed budgets that set forth what you proposed to do for the respondents in the coming year?

A. Well, the -- the answer to that is yes.

Q. And was part of your funding each year to compensate you for consultation and coordination efforts?

A. Well, because there were multiple studies going on, some of which are in different departments, such as urology or psychiatry, there was a separate budgeting

of -- to compensate for the personnel, and so forth, involved of $150,000 per year.

Q. So, for example, in 2007 you submitted a proposal -- if you could bring up CX 873.

Page 2.

And if you'd turn to page 2 of that document, that sets forth your proposed budget for 2007?

A. That's correct.

Q. And it includes a line called overall coordination, education, publication, consulting and advising?

A. Correct.

Q. And it's a hundred thousand dollars.

A. That's correct.

Q. And if you could bring up CX 1006, please.

Okay. Do you see that?

A. It should be magnified a bit.

Q. Can we make that higher?

A. There we go.

Uh-huh.

Q. Is that your 2009 proposal to the --

A. Yes, it is.

Q. -- respondents?

And if you'd turn to page 4 of this document, it includes a line for consultation of $150,000;

correct?

A. Yes. As I indicated, the large number of studies that were being done.

For instance, the effects on cognitive function were directed by Dr. Small in the -- or actually I should say Dr. Susan Bookheimer in the psychiatry department, and that required coordination with them, so the money -- some of the money that was passed through was utilized for that coordination of expensive imaging studies that had been completed.

And so the intrauterine growth retardation was actually done at St. Louis University, and samples were sent to us. And actually those have resulted in a publication, and so -- and then the authentication and chemistry studies were related to this adulteration issue where we did some original discovery on technologies, including some stable isotope methods, to indicate that some manufacturers were adding high-fructose corn syrup to what they purported to have as pomegranate juice, and this was also published in the Journal of Agricultural and Food Chemistry.

So that's all correct.

Q. So when it says here under the consultation line "attend scientific meetings with Mr. Mark Dreher," that would be you; right?

A. That's correct.

Q. And it says "as frequently as needed, often weekly"?

A. Correct.

Q. And rapid response to develop manuscripts, abstracts and presentation of research agenda on a regular basis, that would be you.

A. Well, I would say yes. I would say the adjective "rapid" is relative to a general population because I would say that most publications take somewhere between six months and a year to eventuate, if that, so it was encouraging as rapid as possible response to develop manuscripts, abstracts and presentations.

Q. You attended the POM research summit most years?

A. Yes.

Q. Okay. And each year you would produce and deliver at least one, possibly more PowerPoint presentations --

A. Yes.

Q. -- to present there?

A. That's fair.

Q. And as we just indicated, you regularly participated in conversations about the POM research

with personnel such as Mark Dreher, Brad Gillespie and less frequently Matt Tupper or Stewart Resnick?

A. These were -- I wouldn't character them as frequent. I would say there were a number of meetings for updating maybe quarterly, not more than that, with Mark Dreher frequent communications by telephone and e-mail, but with Mr. Resnick much less frequently. And when we met with Mr. Resnick, Matt Tupper or Harley Liker and David Kessler would typically be present at least for the time since Dr. Kessler has been involved in that scientific leadership group.

Q. Now, you've testified that the Center for Human Nutrition has received from the respondents hundreds of thousands of dollars a year from 2004 to late 2010?

A. That's correct.

Q. Okay. And now, the respondents provide a -- you said they provided a portion of that funding in the form of gifts to the UCLA various donors fund?

A. Yes.

Q. Now, if you could bring up CX 897.

So this would be -- is this a sort of a typical letter where they're transmitting the money?

A. Yes.

Q. Okay. And so it says that it's an unrestricted

gift to be used at your discretion to further the important work that you're undertaking?

A. Yes.

Q. So although these gifts weren't paid directly to you, they were -- they were helpful to you personally, weren't they?

A. Well, in -- I wouldn't say personally. I have a mission of research on the antioxidant effects of fruits and vegetables and other plant products, including green tea. We've done a lot of work with the Strawberry Commission in California, with the Avocado Commission. We did do work with pistachios.

And so there's a lot of work going on in my center in these areas in which I have a genuine scientific interest. And the unrestricted funds were different than contractual obligations in that I had a great deal to do with initiating new leads and doing research that Mr. Resnick doesn't even know about. We continue to do research today that he doesn't know about, that I may tell him about at some point, because we are doing things on our own volition, investigator-initiated research, and he's very generously supported that over the years.

Q. Now, so the -- so in fact, in -- but what I was asking you if this -- if this funding helped you

directly.

If you could pull up CX 952.

Do you recognize this document?

A. Yes.

Q. Okay. And this is a letter from you where you told Mr. Dreher that the funding provided as a gift would help you get more credit from the UCLA dean and help you with school politics?

A. Well, that was almost tongue in cheek. I said, while they don't need it, the identification of my center as a recipient would help me greatly in the school politics. You know, there are constantly little internecine politics within an academic organization, so that's correct. But that doesn't -- I mean, that -- it was the issue of having it as a gift in that particular case rather -- with an appropriate letter would be excellent because of the trust rather than coming from a company was what I was saying.

Q. Now, subsequent to your -- the first deposition that I conducted of you, we received -- you sent us an errata to the --

A. Yes.

Q. -- transcript, and it stated that the total gifts paid into the various donors fund from the Resnick organizations between 2004 and 2010 was one

thousand five hundred and eighty-five thousand dollars; correct?

A. No, no, no.

Q. No?

A. That's incorrect.

Q. Did I read it wrong?

A. Yes.

Q. I did.

A. The Center for Human Nutrition in between 2004 and 2010 expended approximately $18 million, of which about 9.9 percent had come from the Resnicks.

Q. Okay. Well, if we could pull up -- I probably misspoke.

If we could pull up CX 1352.

Oh, I have the wrong -- I have the wrong CX number. It's -- what is it?

It's CX 2015.

And that -- and that document indicates that the total gifts received from the Resnick organizations between 2004 and 2010 was $1.58 million.

A. That's correct.

Q. Okay. Sorry. I'm not actually allowed to balance my own checkbook.

Now, not all of the funds received by UCLA from the respondents in connection with your work were

provided in the form of gifts, were they?

A. No. We had three I believe -- I can't recall exactly, but I believe there are about three research contracts that were also executed by the UCLA Office of Grants and Contracts.

Q. Okay. And so, for example, you stated in response to the CID that we issued to you in 2010 that the -- there was a contract award for the sports performance-enhancing effects of a pomegranate extract sports drink, that you were awarded a hundred and -- excuse me. Not you -- that the Center for Human Nutrition was awarded $189,000?

A. That may be correct. I can't say specifically.

Q. Let me pull that up. It's CX 1132.

A. Okay.

Q. Do you see that?

So there it does -- you -- the information you've provided in response to your CID was that what was awarded by contract was $189,000 --

A. No. It says --

Q. -- and change for the sports --

A. I'm sorry.

Q. -- study?

A. Uh-huh. Correct.

Q. And the study on -- that's mentioned on the next

page, page 3, on bioavailability and metabolism in healthy volunteers of polyphenols from pomegranate fruit extract administered alone or in milk protein-containing products, you were awarded -- the -- UCLA was awarded $150,000?

A. That's correct.

Q. Okay. And then in addition, with regard to the study on quantification, biological activities and the pharmacokinetics of pomegranate polyphenols administered to healthy volunteers as pomegranate juice, powdered extract and liquid concentrate, UCLA was awarded $150,000 there also.

A. That's correct.

Q. Okay. Now, since Mr. Dreher, Dr. Dreher, left respondents, you've been working with Dr. Gillespie; correct?

A. That's correct.

Q. Okay. And that's for the past two or three years?

A. I can't recall the exact time.

Q. And if Dr. Gillespie testified that in 2010 you received a retainer of $150,000 above and beyond the funding that was committed for specific research projects, would he be wrong?

A. No. Once again, I want to emphasize I

personally receive no funds from the Resnicks. All monies from any entity related to the Resnicks, whether it be pistachios or Fiji Water or POM, went directly to the -- with a check to The Regents of the University of California and into departmental funds as unrestricted gift funds, which were then used by the center.

Q. But do you understand that the respondents thought they were retaining your services?

A. No.

Q. And if he testified that there was a line item for retaining you in 2011 to receive a $150,000 retainer, would he be wrong?

A. Yes. That would be incorrect. It's a -- the consultation within the projected budgets made by Mark Dreher represented multiple projects being conducted in the Center for Human Nutrition. And as you'll note, there were numerous people involved in each of those studies.

So when you say there's $150,000 for a particular study, you'll notice a number of coinvestigators as well as a clinical study coordinator, all of the work that has to be done in recruiting those subjects and then the coordination that went along with that, so often these individual budgets would contain in them money actually expended for various aspects,

but then the overall administration of this in the center was subsumed under that separate gift award.

Q. Now, the Center for Human Nutrition has named a laboratory after the Resnicks?

A. That's correct.

Q. And it's called the Lynda and Stewart Resnick Immunonutrition Laboratory; correct?

A. That is correct.

Q. And we were looking a minute ago at CX 873.

And on page 2 of that document under the $250,000 line for the clinical study on POMx effects on inflammation and oxidation it says dedicate the laboratory?

A. That's correct.

Q. And in referring to CX 133 -- do we have that? -- you talk about why the lab was named after the Resnicks?

A. Yeah. I made up the name "immunonutrition" for this particular laboratory because we had found this very central effect of pomegranate on excessive inflammation, so you're not trying to block all inflammation but simply excessive inflammation.

And this area of immunonutrition is an emerging and exciting area. Dr. Bart Aggarwal at the M.D. Anderson Cancer Center in Houston, Texas is someone

that we collaborated with, and I continue to collaborate with him, and I just agreed to coedit a textbook with him on diet, inflammation and nutrition.

And so this particular lab was to honor Lynda and Stewart for their support in launching of this new area. And I had a young faculty member who was going to be based in that laboratory. And it was a very good dedication.

Q. Uh-huh. And you said, I appreciate -- "I hope you will enjoy this small tribute to you and Stewart as it is only a small token of my appreciation for all you have done"?

A. Yes.

Q. Okay.

A. I stand by that.

Q. Okay. And with regard to the work you did for the Resnicks with regard to Fiji Water, that was --

A. Yes.

Q. -- study on Fiji Water and bone health?

A. That's correct.

Q. And the pistachio nuts, those are a Paramount Farms product; right?

A. Well, let me go back and tell you about the Fiji Water protocol.

Fiji Water, because it's an artesian water, has

85 milligrams per liter of silicon. And the late Edith Carlisle, who was a faculty member at UCLA, had shown in animal studies that silicon increases the tensile strength of bone and increases bone density.

So the area of silicon was one that hadn't been addressed. We have a machine in our center that measures bone density, and so we undertook an exploratory study to see the effects of Fiji Water on bone density.

Unfortunately, the Fiji Water did not have any significant effect on bone density, but we did show that the silicon in the Fiji Water was bioavailable and appeared in the urine, so this is an area of ongoing research, not in our center but in many laboratories around the world, of the potential of silicon for bone strength.

Q. And then my question was, was the pistachio nut study conducted on a Paramount Farms product?

A. The Paramount Farms study was directed by -- was on a Paramount Farms product and looked at the area of the effect of pistachios compared to a refined carbohydrate on triglyceride levels.

And this study has now been published. It was also presented at national meetings. And it turns out that the fat in the pistachio is not completely

absorbed into the body because it occurs in small structures so that actually it's something that is safe for people who are on weight-loss regimens to consume compared to pretzels or other refined carbohydrates, so once again there was a good scientific rationale behind that study.

Q. Now, in addition to supplying funds to the UCLA various donors fund, did the -- did the respondents in 2009 make a gift of $150,000 to a nonprofit 501(c)(3) foundation called the University Medical Research Foundation?

A. Yes.

Q. And you called that your rainy day fund to make sure that the Center for Human Nutrition has enough money to cover its costs?

A. Yeah. But this is less of a problem more recently, but the -- prior to the updating of a lot of our accounting systems, there are situations where one has a rapid need for funds. And I asked Mark to contribute money into that 501(c)(3). It's used for covering areas such as when I have a student or somebody that's on a project that's not assigned. Those unrestricted funds can be used that way.

Q. And respondents' documents also indicate that UM -- that the University Medical Research Foundation

received an additional $520,000 in 2008?

A. That's possible. I don't recall.

Q. Now, in deference to your relationship with the respondents, you've even decided not to conduct research on competitive products; isn't that true?

A. Pardon? I don't understand the question.

Q. Okay. In deference to your relationship with the respondents, you have even decided not to conduct research on competitive products; isn't that true?

A. No. I wouldn't say in deference to the respondents. I would say that we have had a lot of our resources devoted to pomegranate, and as a result, we can't simply re -- move those to other areas. Now, we do do studies on a number of other phytochemicals, but I've not been approached by another pomegranate manufacturer, to my knowledge, and rejected working with them.

Q. Well, referring to CX 905?

A. Yeah, that's a good example.

Q. So does that document reflect -- do you recognize this document?

A. I absolutely do, yes.

Q. Okay. And in 2007 you got a call from Allan Pantuck saying that he has a donor who wants him to do mangosteen research on prostate cancer?

A. That is correct.

Q. And you said to Mark: Let me know if this is a conflict and I'll speak to Navindra.

That's one of your -- another one of the doctors --

A. Correct.

Q. -- researchers that used to work with you?

A. If you'd look down to the lower part of that there -- thank you.

So my primary interest is in pomegranate and I don't want to get --

(Admonition from the court reporter.)

THE WITNESS: "My primary interest is in pomegranate and I don't want to get our limited but substantial resources diluted on too many different projects. Best regards, David."

So the point here is mangosteen has very limited evidence in cell culture alone, and it would take many years to get us back to the point where we were with pomegranate, and I am now far along on the pomegranate research.

BY MS. EVANS:

Q. But you did --

A. Now, Mark's characterization "POM would prefer," that's his words, not mine.

Q. But you did decide not to do the research on mangosteen; correct?

A. Absolutely. Because it is one of the so-called superfruits like noni juice and goji berry and all of these things that were predominantly initiated following the research work on pomegranate and were so-called superfruits, and these so-called superfruits had very limited cell culture evidence. And we had a trajectory on pomegranate research, working on it as hard as we could, and I was not about to shift directions to mangosteen.

Q. Now, you wrote a book called The LA Shape Diet; correct?

A. That's correct.

Q. And at the end of the book did you publicly thank Lynda and Stewart Resnick?

A. In my acknowledgments I probably -- because I included a lot of colorful diet research in there, I may have acknowledged them, yes.

Q. Now, was your expertise in this case determined by the legal advisers?

A. I don't see how.

MR. FIELDS: I'm going to object to ambiguity. In fact, I don't know what that question means.

BY MS. EVANS:

Q. Well, if you'd turn to --

JUDGE CHAPPELL: Hold it, hold it.

I didn't hear any of that, Mr. Fields.

MR. FIELDS: Pardon me?

Oh, I object to ambiguity. I don't know what the question means, was your expertise --

JUDGE CHAPPELL: Well, the witness answered it. Are you okay with his answer?

MR. FIELDS: I didn't hear his answer. I was talking too much.

THE WITNESS: My answer was I don't understand the question.

MR. FIELDS: Oh, okay.

JUDGE CHAPPELL: I think the witness objected to your question as vague, so maybe rephrasing will help.

BY MS. EVANS:

Q. You know, I'm going to strike that question.

Now, you do not consider yourself to be an expert in prostate cancer treatment, do you?

A. I consider myself to be an expert in the basic biology, endocrinology, and so forth. I do not -- and in research on prostate treatment certainly. But I do not consider myself a clinician who deals on a daily basis with treating patients with prostate cancer.

However, I do counsel patients with prostate cancer on nutritional matters and have been associated with the Prostate Cancer Foundation for 17 years.

Q. Well, at the question -- I'm sorry -- at your second deposition -- do you recall I took a second deposition of you on March 30, 2011?

A. Yes, I do.

Q. Okay. And I asked you the question: Are you an expert in prostate cancer treatment? And you answered: I would not consider myself an expert in prostate cancer treatment?

A. As I have qualified, that meant in terms of being a clinical urologist. I'm not a board-certified urologist, who are the people that treat prostate cancer, nor am I a board-certified radiation therapist. I'm an endocrinologist and an internist, and as such, I'm very familiar with the hormonal results of prostate cancer treatment. I've been very involved in prostate cancer research. I've advised prostate cancer patients and conducted research seminars in the area, so I do consider myself an expert on prostate cancer, but not on clinical urology as it refers to prostate cancer treatment. That's what I meant by that answer.

Q. Now, with regard to prostate cancer prevention, is it accurate to say that you consider yourself to be

an expert in the interface of nutrition and prostate cancer prevention but not in other aspects of prostate cancer prevention?

A. When you talk about prostate cancer prevention, I am aware of the literature on prostate cancer prevention, all of the research that's been done there, and so I consider myself an expert in prostate cancer prevention.

Q. So again at your deposition on March 30 I asked you the question: Are you an expert in prostate cancer prevention? And you answered: Would you clarify what areas of prevention. And I -- and the question I posed was: Prostate -- prevention generally, and then you can specify areas that you think you are not an expert in.

And you answered (as read):

"ANSWER: Well, again, I would be an expert at the interface of nutrition and prostate cancer prevention.

"QUESTION: But that would be the limits of your expertise in prostate cancer prevention?

"ANSWER: That's correct."

A. Well, that's a very broad area because I would include in nutrition the oxidation, the inflammation, the mutation resulting from that nutrition --

JUDGE CHAPPELL: Hold on, Doctor. There's no

question pending.

THE WITNESS: Oh, sorry.

Ask me a question.

BY MS. EVANS:

Q. You also do not consider yourself to be an expert in cardiovascular disease treatment; correct?

A. Again, I would say yes based on being a cardiologist who does -- I'm not a cardiologist who does invasive treatments, cardiac scans of that sort, but I am someone who knowledgeably counsels patients with heart disease problems, have conducted research on congestive heart failure, on cholesterol-lowering substances, and therefore consider myself an expert in the biology and mechanisms around heart disease, yes.

Q. And turning to page 12 of your March deposition, I asked you the question: Are you an expert in cardiovascular prevention?

"ANSWER: Again, I would say I'm an expert at the interface of nutrition and cardiovascular disease prevention.

"QUESTION: But not prevention?"

A. And what was the answer?

Q. Actually you didn't respond.

A. Again, I would just clarify that I have a very deep understanding of the --

JUDGE CHAPPELL: Hold on, hold on. She read from the deposition, but she didn't ask a question.

THE WITNESS: Okay. Thank you.

BY MS. EVANS:

Q. And you do not consider yourself to be an expert in erectile dysfunction apart -- aside from those aspects related to the basic --

JUDGE CHAPPELL: Are you asking this or are you reading from the depo? You need to let the witness know what you are doing.

BY MS. EVANS:

Q. I will ask -- I'm asking a question.

You do not consider yourself, do you, to be an expert in erectile dysfunction aside from those aspects related to the basic mechanisms underlying erectile dysfunction and their interface with nutrition?

A. That's correct and entirely consistent with what I've said today.

Q. At your deposition in March I asked you -- I'm referring to your testimony on page 11 -- are you an expert in erectile dysfunction? Ms. Son objected. And the witness said: Again, I would have to say only in aspects related to the basic mechanism underlying erectile dysfunction and their interface with nutrition.

Are you -- you do not consider yourself to be an expert in erectile dysfunction treatment, do you?

A. Again, I would say repeat the answer as indicated in the deposition, and I would stand by that, that I'm an expert in the basic mechanisms related to erectile dysfunction, especially as related to nitric oxide, and that was what I spoke to in my expert reports as well as testimony.

Q. And at the deposition I asked you the question, on page 11: Are you an expert in erectile dysfunction treatment? And you responded: No.

A. That's correct.

Q. You are not an expert in consumer understanding of scientific research, are you?

A. That's correct.

Q. And you do not include in your report any judgment regarding FDA or FTC regulatory matters with regard to health claims or advertising.

A. That's correct.

Q. Okay. And with regard to heart disease, you don't know what kind of evidence experts in the field of cardiovascular disease would require to support a claim that a product could lower blood pressure; correct?

A. Can you repeat the question.

Q. With regard to heart disease, you don't know what kind of expert -- evidence experts in the field of cardiovascular disease require to support a claim that a product could lower blood pressure; correct?

A. Well, actually that's an important point that you bring up because, although blood pressure is measured in a lot of studies, a specific claim on blood pressure requires a very specific study with which I have some familiarity, that is, that you have to use special equipment and have specially trained personnel using equipment called a random zero sphygmomanometer and have very special studies to look at blood pressure. And some of my very good colleagues at UCLA have conducted those studies, and I've been aware of them through my various activities.

Now, if you're asking me am I aware of the exact regulatory statute with regard to that, I would say no. But I am very familiar with what would be required to appropriately measure those type of blood pressure changes, and that, I am an familiar with.

Q. At your deposition, turning to page 172, I asked you the question (as read):

"QUESTION BY MS. EVANS: Okay. And on the blood pressure data, what kind of evidence would experts in the field of cardiovascular disease require to support a

claim that a product could lower blood pressure?

"ANSWER: I can't testify to that because I have not surveyed the experts of cardiovascular disease nor hold myself out to be an expert in cardiovascular disease."

A. I agree with that.

Q. Excuse me. There's no question pending.

Now, you previously participated, did you not, in a Federal Trade Commission case called Enforma? Correct?

A. I was a counsel to Judge Lett in Los Angeles at his request to attempt to provide evidence in a very different kind of case that had to do with a weight-loss supplement that was being sold on late-night television. And the parties both agreed for some reason thinking I would be a friendly voice for them, but as it turned out, I was very impressed with my interaction with Judge Lett and advised him that Federal Trade Commission was -- had the appropriate side in that particular dispute. And that was a very different case than this one.

Q. Now, in that case you advised the judge about what kind of evidence was needed to show that a particular dietary supplement caused weight loss; correct?

A. That's correct.

Q. And you were appointed as a special master by the judge?

A. Correct.

Q. And now, this dietary supplement, it was not a prescription drug, was it?

A. No, it was not.

Q. And it contained a variety of different ingredients?

A. That's correct.

Q. And they were making -- you said they were making weight-loss claims on cable television advertising?

A. Yes.

Q. Now, in that case -- I'm turning -- it's CX 2024, and it's on page 5 -- you testified that merely showing that something had a potential metabolic effect does not relieve the parties of demonstrating a significant weight-loss effect in a properly designed study with adequate numbers of subjects and appropriate controls, including placebos, that would allow one to conclude that the item in question had an independent effect above and beyond calorie restriction and increased physical activity.

That's what you said; correct?

A. That's correct.

Q. Okay. So in that case, you said that you needed to show weight loss from a dietary supplement, you needed a placebo-controlled study involving an adequate number of subjects.

A. And the difference is that weight --

Q. Excuse me. Just yes or no.

A. What's the question?

Q. In that study you stated that to show weight loss from a dietary supplement you needed a placebo-controlled study involving an adequate number of subjects, yes or no?

A. Yes, sir -- yes.

Q. And you stated that you needed a placebo control because weight loss can be influenced by a number of behavioral factors; correct?

A. That's correct.

Q. And this could include exercise or making dietary changes.

A. That's all correct.

Q. Okay. And you stated that it was important in a weight-loss study that patients be randomized.

A. Correct.

Q. Okay. And you stated that the inclusion criteria were also important?

A. Yes.

Q. Okay. And that in a given study you might have to select the patients so that the two arms were representative of one another?

A. Correct.

Q. Okay. And you also talked about the importance of blinding in that case; right?

A. Absolutely.

Q. And you said that in a study where there's a major behavioral component, blinding may be necessary.

A. That's correct.

Q. And did you also state that bias could occur if an investigator has a particular hypothesis or strong opinion prior to starting a trial and that subsequently that data is handled by the same investigator rather than an independent statistician?

A. In weight loss, yes.

Q. And you also stated that in every research study you do at the university there's a protocol.

A. Pardon me? I didn't hear you.

Q. You also stated at your second deposition in March that in every research study that you do at the university there is a protocol?

A. That's correct.

Q. Okay. And that those --

A. But that would be -- excuse me. I would have to correct that. That would be for human studies there's a protocol. For animal studies we do have what we call an animal research committee protocol in which primarily the safety of the animals is considered, and we propose there the procedures we're going to do. For a human study there's an institutional review board that we utilize which looks at both the risks and benefits of the study.

Q. And such a protocol would set up the inclusion criteria for the study and identify at least some of the statistical analysis to be conducted?

A. Correct.

Q. Correct. Okay.

Now -- and you have in fact proposed and designed research for respondents that involved randomized clinical trials on humans?

A. I'm sorry. Do you want to repeat that again? I'm not clearly hearing you.

Q. Yes. I'm probably mumbling.

You have in fact proposed and designed clinical human research on humans for respondents; correct?

A. Yes.

Q. Okay. For example, referring to CX 859 -- is that up? Okay -- you were the principal investigator on

that --

A. That's correct.

Q. -- study?

Okay. And that -- that study is sometimes referred to in the documents as the Accelovance study; correct?

A. I can't understand what you're saying.

Q. I'd better get some water.

A. I honestly cannot understand you.

Q. I'm starting to sound like Bert.

Now, this San Diego study, this is sometimes referred to as the Accelovance study; correct?

A. Yes.

Q. That's how you referred to it in your testimony earlier?

A. Yes.

Q. Okay. Now, and that study had a protocol that was entitled -- where is the protocol -- A Placebo-Controlled, Randomized, Double-Blind Study to Compare Antioxidant Levels in Normal Subjects with Elevated Waist Circumference When Administered One or Two Pomegranate Dietary Supplement Capsules for Four Weeks?

A. Yes.

Q. Okay. And some of the endpoints in this study

included whether or not taking POMx would modify antioxidant markers?

A. Yes.

Q. Okay. So that protocol identified the endpoints to be measured in the study?

A. Well, this protocol actually was generated and --

Q. Excuse me. The question has to do with does this protocol identify the endpoints to be measured in the study.

A. The endpoints, yes.

Q. Okay. And the protocol described inclusion criteria and the number of patients to be enrolled and how they would be randomized?

A. Yes.

Q. And the study was double-blind?

A. Yes.

Q. Okay. And it was placebo-controlled.

A. Yes.

Q. Okay. You also designed a study on a type 2 diabetes population. I believe that's CX 949.

And the purpose of that study was to measure whether two different doses of POMx would impact the oxidant stress that was induced by a meal?

A. That's correct.

Q. And --

A. Actually not a meal. A glucose load.

Q. Okay. Glucose level.

And that study started with a protocol that identified the endpoints that you were going to look at and what the statistical analysis would be?

A. Yes.

Q. Okay. And that study was randomized?

A. Yes.

Q. And it was placebo-controlled?

A. Yes.

Q. And it was blinded?

A. Yes.

Q. Okay. And you also provided input on the protocol for Dr. Hill's study which looked at the effect of consuming pomegranate juice on oxidant stress in type 2 diabetics?

A. We -- what do you mean by "input"? I don't understand.

Q. I believe that Dr. Hill asked you for -- to review the protocol and you made some suggestions --

A. Oh, yes.

Q. -- about how that study should be conducted?

A. Yes.

Q. And that, Dr. Hill's study, was also a

randomized clinical trial?

A. I believe so. Yes.

Q. And then the UCLA staff designed and also conducted a study to determine whether a pomegranate product which was a sports drink --

A. Yes.

Q. -- would enhance sports performance?

A. Correct.

Q. Okay. Originally you were going to be the primary investigator; correct?

A. I don't recall.

Q. If you look at -- do we have CX 0659?

Is that document up?

And on that document it indicates that you would be the primary investigator on the project?

A. That appears to be that way, yes.

Q. And ultimately your staff at the Center for Human Nutrition conducted this study?

A. Yes.

Q. And the protocol for that study called for a randomized, double-blind, placebo-controlled?

A. It was placebo-controlled, yes, double-blind, uh-huh.

Q. Was it also randomized and double-blind?

A. Yes. Uh-huh.

Q. I believe you also communicated with Dr. Dreher with regard to the respondents' funding for a study to evaluate the effect of pomegranate juice on cognitive functioning?

A. Yes.

Q. Okay. And in that study the Center for Human Nutrition helped with patient recruitment and data management?

A. That's correct.

Q. And the protocol for that study also called for it to be randomized and placebo-controlled.

A. Yes, that's correct.

Q. Okay. And the Fiji Water study that you talked about in a published article, I believe that's CX 2033.

Is that up?

Okay. You were author on that published article; correct?

A. Correct.

Q. In the conclusion to that study, it states (as read), "Further research included (sic) studies over several years examining changes in bone density following long-term daily consumption of silicon-rich water obtained from artesian" -- how do you pronounce that word?

A. "Artesian."

Q. -- "artesian aquifers in women with reduced bone density are needed."

A. That's correct.

Q. Now, has water from artesian aquifers been consumed for thousands of years?

A. Sure.

Q. So why would you need more research on the benefits of water than you do on a juice?

A. Because this was a pilot study, and to see changes in bone density there are a number of methods, but some of the x-ray methods require two to three years to see a significant difference in bone density, so because we didn't find an effect in this study does not mean that an effect does not exist. There was prior animal evidence of a clear effect of silicon in mice where you could control this, and there is literature on that.

So in the discussion I was saying that while we didn't see anything in this pilot study, we did show that silicon was bioavailable, and now there's a need for future research, which is a common statement in many discussion sections of scientific papers.

Q. Well, this clinical exploratory study showed no effect on bone density.

Do you think you could still say that Fiji Water

might reduce the risk of bone loss?

A. I wouldn't say it based on this study, no.

Q. Okay. Now, you conducted also a study on Chinese red yeast rice.

That's a supplement; correct?

A. That's correct.

Q. And that study was to see that -- the effect of Chinese red yeast rice on serum cholesterol?

A. That's correct.

Q. And that study was also placebo-controlled.

A. Yes.

Q. Okay. Now, when you were seeking -- returning to the cognition study, when you were seeking funding for the cognition study, did you ever advise the respondents that these controlled human clinical studies on pomegranates weren't necessary to know whether or not POM would assist cognitive function?

A. Well, these were, first of all --

Q. Yes or no, sir?

A. Yes or no. I would have to rephrase your question.

MR. FIELDS: Your Honor, I think the witness ought to be entitled to explain his answer, not just say yes and no.

JUDGE CHAPPELL: If he indicates that he cannot

answer with a yes or no and explains why, I'll allow that.

THE WITNESS: Okay.

BY MS. EVANS:

Q. So when you were seeking and receiving funding to help with the cognition study, did you ever advise the respondents that these controlled clinical -- this controlled clinical study on a pomegranate product was not necessary to know that POM assists cognitive function?

A. Okay. The reason I can't answer that question is it is a compound question. If you want to separate it into two questions, that would be fine.

So --

Q. Did you ever advise respondents that you didn't need to do a clinical study on pomegranate to know whether or not POM assists cognitive function?

A. No.

Q. And when you were seeking and receiving funding for the sports performance study, did you ever advise the respondents that this controlled clinical study was not necessary to know that the POM sports drink assists sports performance?

A. Again, no.

Q. And when you were seeking and receiving funding

to conduct the study on use of POM products by diabetics, did you ever advise them that controlled clinical studies on POM products weren't necessary to find out whether or not pomegranate affected insulin levels?

A. That's -- that -- I can't answer that question because it assumes facts that are incorrect.

Q. Okay.

A. The study was not initiated for the purpose of looking at insulin levels.

Q. I'm sorry.

A. The study was initiated not for the purpose of looking at diabetes outcome. The study was initiated to explore whether a glucose load in type 2 diabetics might engender an oxidant stress response since it's very difficult -- unlike sports performance and unlike body weight, it is very difficult to measure oxidant stress in humans because of the endogenous oxidant defense mechanisms. Therefore, we designed a study, both at UCLA and at University of Colorado, to explore the possibility that a glucose load would result in an oxidant stress that could then be counteracted by pomegranate juice or pomegranate extract.

Q. Okay. And so when you were seeking and receiving funding to help with the study that you have

just described, did you ever advise respondents that this controlled clinical study wasn't needed to show that effect?

A. I was never asked the question and I never provided that answer.

Q. Okay. And when you were seeking and receiving funding to help with the Accelovance study on POMx and anti-inflammatory markers, did you ever advise the respondents that this controlled human clinical study was not needed to show whether or not consuming POMx had an effect on anti-inflammatory markers?

A. Again, that's a difficult question to answer because it assumes facts that are incorrect.

That was an exploratory study of antioxidant effects of pomegranate juice in an opportunistic fashion in subjects being studied at a clinical research organization, Accelovance, as I testified in my deposition, to look at the safety of pomegranate. We took an opportune moment to look at antioxidant defense, but as it turned out, that wasn't the appropriate design.

So in that particular case, the inclusion criteria were normal people who were going to take pomegranate extract in our case, and that was going to be for a four-week period. And that was not the type

of inclusion that would allow in a baseline and four-week measurement for measurement of antioxidant stress.

The idea for that protocol came from a Chinese study in which tea or pomegranate was given to people who were smokers in the Chinese army, where smoking definitely creates an oxidant stress, and the pomegranate was shown to be superior to the green tea. That was the idea of that protocol. However, as it worked out, it wasn't a very good idea.

Q. But the question I asked you was did you ever advise them that it wasn't necessary to conduct this study if you wanted to find out whether or not pomegranate affected antioxidant levels in this population.

A. Again, you're asking a question that assumes that I don't think that randomized controlled trials are a tool. They're one of the investigative tools that we use, but not the only tool, and that I still come back to the totality of evidence from basic, clinical and then randomized trials where possible, but randomized trials don't always work out.

Q. So I can assume from your answer that you never did tell them that a randomized trial was not necessary to determine that effect.

A. Never said that it was necessary or unnecessary and was never asked the question in that way.

Q. Now, I believe we said earlier that you participated in periodic meetings with representatives of the respondents with regard to cardiovascular research?

A. That's correct.

Q. Okay. And these meetings would -- and you said that they would include Mr. Resnick, Mr. Tupper, Dr. Dreher, Dr. Kessler, other scientists and sometimes experts in heart disease or who had conducted heart disease research?

A. Well, I was dividing up the meetings. The way that Dr. Liker testified this morning is probably more accurate. And that is, we have usual meetings, and then on occasion a group would be convened either in prostate cancer or heart disease that included scientists completely uninvolved with the research going on at POM, who would come in and look at the entire body of research. And I -- on some occasion I was not even in town, I would call in by conference phone and listen to those conferences, but I was certainly attending those conferences, yes.

Q. Okay.

JUDGE CHAPPELL: How much more time do you think

you need for your cross?

MS. EVANS: More than a half hour, sir.

JUDGE CHAPPELL: All right. Let me ask a few questions here.

THE WITNESS: Sure.

JUDGE CHAPPELL: At the end of your direct examination, in response to a couple questions you referred to competent and reliable science showing certain effects of POM and POMx. Do you recall that?

THE WITNESS: Yes.

JUDGE CHAPPELL: How do you define "competent and reliable science"?

THE WITNESS: Competent and reliable science is based on peer-reviewed publications and generally studies that have been performed that are scientifically valid, whether they're done in cell culture, in animals, in humans, not necessarily a randomized trial. We do some studies that are single-arm studies. We have various methods.

So I would say that a substantial scientific agreement for a drug would be based on randomized clinical trials, but for this area and all the questions that I was asked I would respond based on the totality of scientific -- substantial scientific evidence that is competently performed.

JUDGE CHAPPELL: Is this covered in your expert report? What it means? How you define it?

THE WITNESS: I don't believe so. I don't believe I -- I put that -- I'm not sure. I'd have to review my expert report, but I certainly -- actually I take that back. It is in the expert report in the sense that I do discuss a couple of points regarding the types of research and the totality of evidence that would need to be used, and I believe that that is in expert reports, and I believe that the -- that question had been asked to some of the other witnesses as well because I reviewed some of their expert reports as well. And the evidence would indicate that one can go beyond randomized clinical trials and look at totality of competent evidence.

JUDGE CHAPPELL: Okay. Thank you.

Let's pause for a second. I'd like to see lead counsel up here, please.

(Sidebar discussion off the record.)

JUDGE CHAPPELL: We just had a brief discussion about some scheduling issues. If anyone thinks they need to be on the record, we can do that.

MR. GRAUBERT: No. That's all right, Your Honor.

MS. HIPPSLEY: Well, in the next updates

we'll -- yes.

JUDGE CHAPPELL: Okay. Thanks.

We'll go ahead and end here today. It's about 5:25.

We'll reconvene tomorrow at 0930. We're in recess.

(Whereupon, the foregoing hearing was adjourned at 5:23 p.m.)

# C E R T I F I C A T I O N  O F  R E P O R T E R

DOCKET/FILE NUMBER: 9344

CASE TITLE: In Re POM Wonderful LLC, et al.

HEARING DATE: August 30, 2011

I HEREBY CERTIFY that the transcript contained herein is a full and accurate transcript of the notes taken by me at the hearing on the above cause before the FEDERAL TRADE COMMISSION to the best of my knowledge and belief.

DATED: SEPTEMBER 5, 2011

JOSETT F. WHALEN, RMR

# C E R T I F I C A T I O N  O F  P R O O F R E A D E R

I HEREBY CERTIFY that I proofread the transcript for accuracy in spelling, hyphenation, punctuation and format.

ELIZABETH M. FARRELL