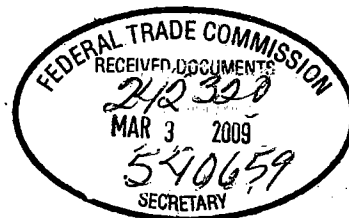


UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION
OFFICE OF ADMINISTRATIVE LAW JUDGES



In the Matter of)
)

DANIEL CHAPTER ONE,)
a corporation, and)

JAMES FEIJO,)
individually, and as an officer of)
Daniel Chapter One)
_____)

Docket No. 9329

Public Document

DEPOSITION TESTIMONY SUBMITTED IN SUPPORT OF COMPLAINT
COUNSEL'S MOTION FOR SUMMARY DECISION

In the Matter of:
Daniel Chapter One, et al.

February 6, 2009
Denis R. Miller

Condensed Transcript with Word Index



For The Record, Inc.
(301) 870-8025 - www.ftrinc.net - (800) 921-5555

I N D E X

WITNESS:	EXAMINATION	PAGE
DR. DENIS R. MILLER	MR. J. TURNER	4

E X H I B I T S

NUMBER	DESCRIPTION	PAGE
DCO 1	Labels for each of the four products.	135

For The Record, Inc.

(301) 870-8025 - www.ftrinc.net - (800) 921-5555

0188450d-5ae1-4dbd-b6f4-4f5bd91ebda2

1 UNITED STATES DISTRICT COURT
2 FEDERAL TRADE COMMISSION

3
4 In the Matter of:)
5 DANIEL CHAPTER ONE, a corporation,) Docket No. 9329
6 and)
7 JAMES FEIJO, individually, and as)
8 an officer of Daniel Chapter One,)
9

10
11 Friday, February 6, 2009

12
13 Federal Trade Commission
14 One Bowling Green
15 New York, New York
16

17
18 The above-entitled matter came on for
19 deposition, pursuant to Agreement, at 9:30 a.m.
20

21 Pages 1 - 194
22 Reported by: Linda A. Schilt
23
24
25

1 DR. DENIS R. MILLER, having first been
2 duly sworn by a Notary Public of the State of New York,
3 was examined and testified as follows:

4 EXAMINATION BY
5 MR. S. TURNER:

6 Q. Good morning.

7 A. Good morning.

8 Q. Dr. Miller, could you state your name, address
9 and professional title for the record.

10 A. Yes. Denis R. Miller, D-E-N-I-S. My address
11 is 36 East Lake Road, Tuxedo Park, New York 10987.
12 My official title?

13 Q. Yes, whatever your professional title is.

14 A. I'm a therapeutic area leader for oncology
15 hematology at Parexel, P-A-R-E-X-E-L, all capital
16 letters, International.

17 Q. Thank you. Dr. Miller, you met Betsy Lehrfeld
18 who is here, Chris Turner, and I'm Jim Turner, and we
19 are representing the respondent in this case, Daniel
20 Chapter One.

21 A. Yes.

22 MR. J. TURNER: What we're planning to do today
23 is go over your expert witness report and talk about
24 that and I want to do three things: One is to talk
25 about how the report was prepared, that's the first

1 APPEARANCES:

2
3 ON BEHALF OF THE FEDERAL TRADE COMMISSION:

4 THEODORE ZANG, JR., ESQ.
5 CAROLE A. PAYNTER, ESQ.
6 One Bowling Green - Suite 318
7 New York, New York 10004
8
9

10 ON BEHALF OF THE DEFENDANTS:

11 JAMES S. TURNER, ESQ.
12 CHRISTOPHER TURNER, ESQ.
13 BETSY E. LEHRFELD, ESQ.
14 SWANKIN & TURNER
15 1499 16th Street, N.W.
16 Washington, D.C. 20036
17
18
19
20
21
22
23
24
25

1 part; and the second part is to go through the report
2 itself; and then the third part is any leftover general
3 questions or concepts, stuff that we didn't cover in
4 the previous two sessions. We'll take probably all day
5 to do this, basically from now until five. I guess
6 we'll break for lunch for about an hour, 45-minutes to
7 an hour, right in the neighborhood.

8 MR. PAYNTER: That sounds fine.

9 MR. J. TURNER: Whatever makes sense, probably
10 around noon. If you have any need for a break at any
11 time, just say I need a break. If you need water,
12 anything like that, just say you need that, whatever,
13 and we'll do the same if I have to stop for a while.
14 We might take a break in the morning sometime and in
15 the afternoon, you know, for a few minutes. That's
16 kind of the way we've been doing it.

17 MR. PAYNTER: Just for the record, Dr. Miller
18 has an appointment for 7 o'clock this evening.

19 MR. J. TURNER: I'm reasonably sure I'll be
20 done by five. That's kind of what we agreed to. It
21 may go over a little more, it may end before that. I
22 know what I need to know and when we get there we'll
23 get there. I'm pretty sure it's not going to go past
24 five or maybe shortly after five.

25 MR. PAYNTER: Okay.

1 Q. I wanted to begin, Dr. Miller, with asking you
2 questions about how the report was prepared. So the
3 first question I have is how did you hear about this
4 case?

5 A. I believe I received a telephone call from
6 Mr. Zang, who's not here.

7 MR. PAYNTER: He's here.

8 A. There he is, I'm sorry.
9 And there may have been someone else on the
10 call at that time. I'm not sure if Carole was on the
11 call. I got a call from the FTC.

12 MR. J. TURNER: Are you saying, yes, you were?

13 MR. PAYNTER: I don't know if I was.

14 A. I know Ted was on the call and it was an
15 introductory call broadly finding out who I was and
16 what I had done and whether I had done any work on
17 issues relating to claims about the anticancer activity
18 of certain products.

19 And I reviewed my experience and we had a few
20 more teleconferences where after I had submitted my CV,
21 and it was at that point in time after I signed a
22 confidentiality agreement and a contract was set into
23 place I was then specifically asked to review whether
24 these four products of Daniel Chapter One would satisfy
25 some of the claims that were made about them and

1 claims made that these products all by themselves had
2 potent and effective anticancer activity.

3 Q. Now, I asked you before this answer that you
4 gave what was your understanding the products were,
5 what did you think they were?

6 A. Well, there were four products.

7 Q. What I mean is what class were they; foods,
8 drugs, food additives, what was your understanding?

9 A. Well, I looked at them as agents that would
10 have -- I asked the question do these agents or
11 products have any anticancer activity.

12 Q. How did you come to form that question as the
13 question you were asking or answer?

14 A. It was based upon claims that were made and in
15 support of these four products stating that they could
16 inhibit cancer growth or tumor growth, that they were
17 effective in the treatment of cancer, that they might
18 actually obviate some of the adverse effects of cancer
19 treatment itself.

20 Q. And how did you arrive at those claims as
21 claims that you were going to evaluate?

22 A. From the review of the Daniel Chapter One web
23 site and the supporting information that came from
24 their web site about what their products do and how
25 they might help patients with cancer.

1 whether there was reliable and supportable evidence
2 that these claims were reasonable, scientifically and
3 medically.

4 So then I began my work and that was in October
5 of 2008.

6 Q. And when you were asked about these products,
7 what did you understand the products to be?

8 A. I had to wait until I had gotten the complaint,
9 and I had to wait until I got specific information
10 about the products themselves, and then I began a
11 review of some of the literature and other documents
12 that were submitted by Daniel Chapter One in support of
13 their claims and evidence as well as my own very in
14 depth review of the literature that relates to a number
15 of these compounds or products that have been used in
16 the treatment of cancer.

17 Q. When you say "have been used in the treatment
18 of cancer," what do you mean by that?

19 A. A good example would be shark cartilage. There
20 have been reports of the use of a number of
21 complimentary medicines in its broadest definition that
22 have been used to complement conventional cancer
23 therapy to see whether it might improve quality of life
24 or it may have additive effect to conventional
25 anticancer therapy, and in some cases there have been

1 MR. PAYNTER: Can you read back the question,
2 please.

3 (The requested portion was read.)

4 Q. So now you had in your mind the claims. Had
5 you determined in your mind yet whether you were
6 dealing with a food, a drug, a food additive or some
7 other substance?

8 MR. PAYNTER: I'm just going to object on
9 foundational because you're asking him did he determine
10 the claims and I think you can ask him the question did
11 you determine what the claims were and that might
12 actually clarify it. I think the record is a little
13 unclear right now as to who determined the claims in
14 this case.

15 MR. J. TURNER: Well, actually, I'm going to
16 ask that question more specifically when we get to the
17 claims in the document. What I'm trying to understand
18 and am trying to ascertain is as he began the process
19 what was his assignment.

20 MR. PAYNTER: Well, that might be a better
21 question.

22 A. Well --

23 MR. J. TURNER: That's the generic question.
24 I had already asked that but we can go back through it
25 again.

1 Go ahead.
 2 A. I was asked by the FTC to determine whether
 3 there was competent and reliable scientific evidence to
 4 substantiate a number of claims about these four
 5 products; whether they inhibited tumor growth, whether
 6 they were effective in the treatment of cancer, whether
 7 they can actually eliminate tumors or whether they can
 8 actually heal or obviate the adverse effects or
 9 destructive effects of radiation therapy or
 10 chemotherapy. And I was asked to provide reliable and
 11 competent evidence, if I could find it, in support of
 12 these claims.

13 Q. Was this before or after you saw the complaint?

14 A. Was what before or after I saw the complaint?

15 Q. Had you looked at the web site and formulated
 16 some ideas about claims and had you begun your work and
 17 the question I'm asking is: Did that activity that you
 18 described, and there were some other things in there,
 19 take place before or after you read the FTC complaint?

20 A. I can't tell you exactly the order of things.
 21 There were so many different things that I reviewed.
 22 The complaint was one thing to get a focus on what the
 23 case was all about, but I reviewed all the literature
 24 that was provided by Daniel Chapter One in support of
 25 their position. I reviewed my own literature sources

1 that related to the same issues. I reviewed different
 2 web sites. I reviewed material from different cancer
 3 centers. I reviewed my own huge body of literature in
 4 this area because I've done a lot of work in it. So
 5 there were so many different sources that I reviewed
 6 before I even began writing my report or formalizing my
 7 opinions.

8 Q. I just want to understand. You don't recall
 9 whether you had seen the complaint before you started
 10 the process?

11 MR. PAYNTER: Objection.

12 A. I don't remember.

13 MR. PAYNTER: Objection.

14 MR. J. TURNER: On what ground?

15 MR. GREENE: That's a very unclear question.

16 Q. The question is that you said you began your
 17 activities in October, that's what you recalled?

18 A. Yes.

19 Q. Let's walk through it. Then you did a number
 20 of things that you laid out and described. When did
 21 you begin to do the work that ended up with the report?

22 A. When did I begin my work that related to my
 23 report? In October when I began a review of
 24 everything relating to these products.

25 Q. Do you have any idea when you received a copy

1 of the complaint?

2 A. I don't recall. I listed all the things that I
 3 reviewed but I didn't put down the date I reviewed all
 4 of them because it was an ongoing dynamic process.

5 Q. Okay. What was your reason for taking this
 6 assignment on?

7 A. What was my reason for taking the assignment
 8 on?

9 Q. Yes.

10 A. I'm an oncologist. I spent my career in
 11 treating, diagnosing and I think making some advances
 12 in the way we treat cancer patients, and I'm interested
 13 in all potentially effective therapies to improve the
 14 life of a cancer patient; and I've been doing that all
 15 my life. I've also done a lot of work in what I would
 16 call complimentary medicine, supportive care in cancer
 17 patients. And when I was asked to review this, it was
 18 something I had knowledge of and an interest in and
 19 said, yes, I'd be happy to review these products and
 20 see whether there is competent and reliable evidence to
 21 support their use in treating cancer.

22 Q. Um --

23 A. I never heard of them before and so it was --
 24 except for shark cartilage, but I never heard of this
 25 company before, nor had I heard of any of their

1 products.

2 Q. What are your thoughts about the company,
 3 having done this review, what is your impression of the
 4 company?

5 A. My impression of the company or my impression
 6 of the company doing the review? I'm not sure which
 7 part of that --

8 Q. You reviewed products of a company.

9 A. Yes.

10 Q. What are your impressions of the company?

11 A. I don't know how to answer that, okay.

12 Q. Okay.

13 A. I never met the people who own the company.
 14 All I've read is what they have in the public domain
 15 and that's all I know about them, and I read the
 16 depositions of Jim Feijo and his wife Patricia, Tricia.

17 Q. Okay.

18 A. That's all I know about the company, but I
 19 never met them personally, never interviewed them,
 20 never visited their sites of business.

21 Q. I want to now go to the second part of this,
 22 which is the main activity here, which is going over
 23 the report itself. We've done a little bit of that now
 24 because you used some of it to answer these questions
 25 but we may go over some of that.

1 Do you have a background in nutrition?
 2 A. Am I a nutritionist, no. Do I know about
 3 nutrition as it relates to cancer patients, yes.
 4 Q. Can you describe your knowledge about nutrition
 5 as it relates to cancer patients?
 6 A. Well, I'm very aware of the importance of
 7 nutrition in cancer patients. I'm very well aware of
 8 the adverse effects of malnutrition. I'm aware of how
 9 important it is for cancer patients who are undergoing
 10 therapy to make sure that they're well hydrated and not
 11 malnourished and, if they are, to treat those
 12 deficiencies so they can tolerate their treatment
 13 better and have a better quality of life.
 14 I am constantly engaged in working with
 15 nutritionists and metabolic colleagues to help support
 16 cancer patients that I treated in a comprehensive and
 17 full way.
 18 Q. Do you have any training in nutrition?
 19 A. No.
 20 Q. Do you have any certifications in nutrition?
 21 A. No.
 22 Q. I noted in your credentials that you were
 23 involved in oncology/hematology. Is that your area of
 24 expertise?
 25 A. I'm board certified in oncology and hematology.

1 into board certification in either oncology or
 2 hematology. Some people have one or the other and some
 3 people have both. In pediatrics it's a combined board
 4 certification.
 5 Q. When you're certified in oncology/hematology
 6 you're certified in all oncology?
 7 A. Yes.
 8 Q. All tumors and not just blood?
 9 A. No. Oncology covers all cancer and, as I said,
 10 some hematologic malignancies are also cancer.
 11 Leukemia is a cancer of the blood. Hematology goes
 12 beyond cancer. It includes things like anemia. It
 13 could include things like bleeding disorders, like
 14 hemophilia. It includes clotting disorders for people
 15 who develop blood clots. It might include
 16 non-malignant disorders that effect any of the
 17 different blood cells of the body.
 18 Q. Does leukemia involve tumors?
 19 A. Leukemia is a hematologic malignancy that is
 20 not considered a solid tumor. Blood malignancies are
 21 not the same as a colon cancer. There is nothing solid
 22 about leukemia.
 23 Q. When you're certified in oncology/hematology,
 24 you would be pediatric oncology/hematology, that is
 25 what your certification is in?

1 Q. Do you have other board certifications?
 2 A. Pediatrics.
 3 Q. Could you describe what oncology/hematology is?
 4 A. Oncology is the study of the diagnosis, cause,
 5 treatment of cancer.
 6 And hematology is the study of the cause,
 7 diagnosis and treatment of blood diseases. Some blood
 8 diseases are cancers.
 9 Q. Do they involve tumors?
 10 A. Yes.
 11 Q. A blood disease -- does blood oncology involve
 12 tumors?
 13 A. Blood tumors.
 14 Q. Oncology/hematology, does that involve tumors?
 15 A. Oncology is cancer, which can include solid
 16 tumors and disorders like leukemia or lymphoma which
 17 are hematologic malignancies.
 18 Q. What is your board certification in?
 19 A. Pediatrics and pediatric hematology/oncology.
 20 Q. In hematology/oncology, that's two things; one
 21 is hematology and the other is oncology.
 22 A. In pediatric board certification you get
 23 certification for both oncology and hematology.
 24 Q. Go ahead.
 25 A. In medicine, internal medicine, it's divided

1 A. Yes.
 2 Q. I want to understand, just to clarify. You
 3 originally said you were certified in pediatrics and
 4 that you were certified in oncology/hematology. Is
 5 that two separate certifications or one combined
 6 certification?
 7 A. One has to be trained in general pediatrics
 8 first, and then gets additional training in hematology
 9 and oncology to qualify for certification in hematology
 10 and oncology.
 11 Q. If someone is qualifying for oncology and
 12 hematology, do they have to have a certification in
 13 pediatrics?
 14 A. I didn't understand that.
 15 Q. If a person is seeking certification in
 16 oncology/hematology, do they need to be certified in
 17 pediatrics first?
 18 A. If it's pediatric hematology/oncology that
 19 they're going for, is that what you mean?
 20 Q. No. I'm just going by what it says here. Are
 21 you certified in pediatric oncology/hematology?
 22 A. Yes. Let me just clarify because it's very
 23 confusing for anybody trying to read this. You have to
 24 be certified in pediatrics first. That means you have
 25 to complete a residency in pediatrics. Once you've

1 done that, then you go on and take a fellowship in
2 oncology/hematology in pediatrics, and after
3 successfully completing your fellowship training, and
4 successfully passing the board examination, you then
5 become certified in hematology/oncology combined in
6 pediatrics.

7 Q. And that would certify you to be qualified to
8 do colon cancer, pediatric colon cancer?

9 A. Well, if indeed I saw a case of pediatric colon
10 cancer, and I have, yes, I'll be certified to do that.

11 Q. That's what I'm trying to get at. I had
12 skipped a paragraph.

13 You have been involved with a number of
14 institutions, University of Rochester Medical Center,
15 New York-Cornell Medical Center, Memorial Sloan
16 Kettering and Northwestern University Medical School;
17 is that right?

18 A. That's correct.

19 Q. How were you funded in those jobs? Were you
20 paid by those institutions?

21 A. I was paid by those institutions, correct.

22 Q. Did you have grants from any sources?

23 A. Yes, I did have grants that supported my
24 research work at those institutions.

25 Q. Can you tell me where those grants came from?

1 A. At Rochester Medical Center, New York
2 Hospital-Cornell, Memorial Sloan Kettering and at
3 Northwestern most of the grants came from the National
4 Cancer Institute

5 Q. How about the Cornell, same?

6 A. Well, Cornell is New York Hospital Medical
7 Center. Yes, the grants I had then came primarily from
8 the National Cancer Institute. At New York
9 Hospital-Cornell, our department, our division in
10 hematology/oncology was funded by a private
11 philanthropic organization, Children's Blood
12 Foundation, which is here in New York City, which
13 provided a large portion of the support for the whole
14 division. Salaries for the faculty, research program,
15 fellowship program and the funds went to the
16 university, to the medical school, but the research
17 foundation funded a great deal of what we were doing at
18 New York Hospital-Cornell.

19 At Memorial Sloan Kettering I had a large
20 program project grant from the National Cancer
21 Institute to study hematologic malignancies.

22 Q. Do hematologic malignancies involve tumors?

23 A. You asked me that question. I'll try to
24 explain it. When you think of a tumor, think of a
25 breast cancer, think of a brain tumor or think of

1 pancreatic cancer. They're solid tumors.

2 When you think of a blood tumor, malignancy of
3 the blood, hematologic malignancy, think of a cell
4 floating around the body in the blood stream or lymph
5 nodes. So they're not solid tumors, if you will,
6 they're liquid tumors. They're still cancer but it's
7 just what kind of cancer it is.

8 Q. In your practice you worked on both solid
9 tumors and liquid tumors that you just called them?

10 A. Yes.

11 Q. What is the ratio of solid tumor work you've
12 done versus liquid tumor?

13 A. Depends what part of my career.

14 Q. How about while you were working at these
15 institutions?

16 A. Up until 1990 when I had positions as either
17 chairman of a department or division head in a
18 hematology/oncology program, most of my own clinical
19 activities and my own research activities involved
20 hematologic malignancies, leukemia, although I took
21 care of patients with solid tumors, brain soft tissue
22 sarcomas or any of the solid tumors we saw in
23 pediatrics.

24 In 1990 I had a major career shift and at that
25 time joined an organization that was involved primarily

1 in the diagnosis and treatment of adult patients with
2 cancer. So that from 1990 until today, most of my
3 clinical activities involve tumors that are seen in
4 adult population more commonly than in pediatric
5 population.

6 Q. Those are more commonly solid tumors?

7 A. More commonly solid tumors, although I'm still
8 doing work with hematologic malignancies.

9 Q. You described this now as the treatment of
10 patients?

11 A. Diagnosis and treatment.

12 Q. And treatment. With regard to your research
13 activity, was it pretty much the same ratio and the
14 same experience in your career change?

15 A. Again, before 1990 it was primarily hematologic
16 malignancies and I would say 80 percent was hematologic
17 malignancy in terms of my time and effort in the clinic
18 or laboratory.

19 From 1990 until the present day the activity
20 has been more in solid tumors, like non-small cell lung
21 cancer, breast cancer, colon cancer, although there is
22 activities that I have now that relate to lymphomas and
23 leukemias, but it's more solid tumors because of the
24 adult population. Solid tumors are more common than
25 hematologic malignancy.

1 Q. You said in 1990 you had a major career change.
2 What was that career change?

3 A. I left an academic environment in a teaching
4 hospital and became the associate medical director of
5 an organization called Cancer Treatment Centers of
6 America, so I was the associate medical director there.
7 And I also was in charge of the clinic research program
8 at the different hospitals, centers and clinics of
9 Cancer Treatment Centers of America.

10 In 1993 I became the scientific director of the
11 not-for-profit research activity in Cancer Treatment
12 Centers of America called Cancer Treatment Research
13 Foundation. I still had my clinical activities at the
14 hospital and even during that time I had my own
15 clinical activities taking care of children and
16 adolescents with cancer, but my work shifted in terms
17 of actually directing the clinical research program
18 inpatients with adult patients with cancer, which meant
19 I helped in my own protocol development, brought in new
20 agents to evaluate patients with advanced stage cancer.
21 These were agents that were undergoing clinical
22 investigation and had not yet been approved. And we
23 also were involved in a very broad program of providing
24 total comprehensive care to patients.

25 Q. Can you describe what total comprehensive care

1 willing to give up. They're willing to try something
2 that might be effective that might prolong their lives
3 to get them from Thanksgiving through the new year.

4 So many of the patients that came were either
5 referred by other doctors or came as several referrals
6 of patients with very advanced stage disease and in
7 some cases we could offer those patients additional
8 therapies. I'm talking about conventional therapies,
9 or an investigational therapy they were interested in
10 participating in, clinical trial.

11 At the same time we were very tuned into
12 looking at the patient's nutrition, looking at other
13 deficiencies the patient might have, looking to see
14 whether there were psychosocial issues that were
15 impacting on their ability to tolerate therapy, were
16 they depressed, do they need psychosocial support. All
17 of those were part of the total comprehensive care the
18 patients got.

19 Q. What kind of criteria did you use to decide if
20 somebody said I don't want to give up and get my
21 affairs in order, I want to go from Thanksgiving to
22 Christmas, what kind of criteria do you use to assign
23 things to them?

24 A. Well, first of all, if you're going to put a
25 patient on a clinical trial, clinical study, you want

1 involves?

2 A. Patient has cancer, it has to be diagnosed and
3 treated effectively, but patients with cancer have
4 other needs. They have psychosocial problems, may have
5 nutritional problems. They need good supportive care
6 so the philosophy at Cancer Treatment Centers of
7 America was to provide total comprehensive care to
8 cancer patients to bring in not only cancer doctors but
9 nutritionists, psychosocial support people, other
10 members of the team that would improve the overall
11 therapy of the patient with cancer.

12 Q. What would the typical patient that comes to
13 American Cancer Centers -- is that it?

14 A. Cancer Treatment Centers of America.

15 Q. When they arrive there, what kind of program
16 would they be put into, treated as?

17 A. Depends on the patient. Most of these patients
18 were previously treated who had one or more recurrences
19 of their disease. Often they came because at their own
20 hospitals or in the clinics where they were being
21 treated, their advice was not too much more we can do
22 for you, your disease has been through all the
23 available therapies, you may want to just consider
24 quality of life, no more treatment and get your affairs
25 in order. And patients, many patients today are not

1 to make sure that the patient meets certain eligibility
2 criteria. If they're in congestive heart failure and
3 their liver is failed and kidneys aren't working,
4 they're not going to be able to tolerate treatment very
5 well. So you want to make sure that patients meet
6 rather straightforward and important criteria that
7 would make them eligible for the study, one of which
8 would be what is their estimated lifespan. If a
9 patient is so far advanced in the disease and the
10 disease has effected vital organs in the body, like the
11 liver or the heart or the lungs or kidneys, those
12 patients are not going to tolerate therapy very well so
13 you'll never be able to test whether a new treatment is
14 effective or not.

15 Q. What do you do with those patients?

16 A. We give them our advice about what we think
17 might be best for them. Some of those patients are not
18 considered candidates for treatment but they're given
19 supportive care.

20 Q. What kind of supportive care would you --

21 A. Well, if the patient is depressed, they might
22 need psychosocial, psychiatric support. If they're
23 malnourished, they could be treated with nutritional
24 support if they wanted it. If they have serious pain
25 problems, they could be given better coverage for their

1 pain because cancer pain is a major problem. Those are
 2 the kinds of things that we would look at.
 3 Q. What role does their desire play in your
 4 treatment prescribed for them?
 5 A. It's absolute. The patient has to provide you
 6 with informed consent to go on any treatment and the
 7 patient has to be a partner in that treatment program.
 8 You can't force anything on somebody. They have some
 9 empowerment. Yes, I want to go along with that
 10 program, or no, I don't.
 11 Q. Now, I understand from what you're saying that
 12 some people who come there, even in the conditions that
 13 they are, are treated with conventional
 14 chemotherapeutic agents; is that right?
 15 A. Depends on what their prior therapy has been.
 16 Some patients may have been through all the
 17 conventional hemotherapeutic agents, including
 18 radiation and surgery, conventional therapeutic agents
 19 and are maybe no longer responding to any of them. And
 20 patients like that might be candidates for a study
 21 that's looking at a new investigational drug at a much
 22 earlier stage in the development. It may be
 23 chemotherapy or what we call targeted therapy, going
 24 after some unique feature of the cancer itself, and
 25 these are early phase studies where we don't -- these

1 Q. What did you do at that point?
 2 A. At that point I had a choice of going back into
 3 academia or actually going into the pharmaceutical
 4 industry or doing my own thing, and what I did was my
 5 own thing. I created my own consulting company, one
 6 chief, that was me, no Indians, and I worked with the
 7 pharmaceutical industry in areas of my expertise to
 8 help them in their development of primarily new agents
 9 to treat cancer or blood diseases.
 10 Q. What was the name of the organization?
 11 A. Expert Medical Consultants, Inc.
 12 Q. How long did you maintain that entity?
 13 A. Well, I still maintain it but only for
 14 activities like this. I'm full-time in the job I have
 15 and I've been full-time in the industry since about
 16 2003, but during that time --
 17 Q. You said full-time in --
 18 A. In industry.
 19 Q. What do you mean by "industry"?
 20 A. Either the pharmaceutical industry or with a
 21 contract research organization.
 22 Q. Is that a particular organization that you were
 23 with?
 24 A. Well, maybe we should go through my CV so it's
 25 clear. I worked with a number of different

1 are not approved drugs. They've gone through a certain
 2 process of evaluation before they ever were used in a
 3 human being with cancer, but in some of these studies
 4 we were just trying to determine what the most
 5 effective dose might be to move on to seeing whether
 6 it's going to be active against specific types of
 7 cancer.
 8 Q. I want to continue asking you questions about
 9 what we just have been discussing, but I want to --
 10 before I do that -- ask you some background questions.
 11 How long did you remain at the cancer center?
 12 A. I was at Cancer Treatment Centers of America
 13 and the Cancer Treatment Research Foundation from 1990
 14 until the end of 1996.
 15 Q. Then what did you do career wise at that point?
 16 A. I moved from the Chicago area back home, which
 17 is the Metropolitan New York area, and actually joined
 18 a start-up biotech company developing a new innovative
 19 therapy for the treatment of cancer. I was their vice
 20 president for clinical oncology.
 21 Q. How long did you remain there?
 22 A. Until the company went belly up, which was
 23 about eight months later.
 24 Q. Eight months later?
 25 A. Yes.

1 organizations when I had my company called Expert
 2 Medical Consultants. I work with, for example, a
 3 company in New Jersey that was developing a new drug to
 4 treat pancreatic cancer and mesothelioma, which is the
 5 wall of the peritoneal cavity or pleural cavity. So I
 6 worked part-time with them, helping them with their
 7 clinical development program, interaction with the FDA.
 8 I wrote some of their study reports and helped them
 9 move their drug along.
 10 At the same time I worked with another company
 11 out in California that was developing a drug to treat
 12 tumors that were pretty superficial where if you gave a
 13 certain drug intravenously, it would be picked up by
 14 the tumor in the tumor cells, and if you hit that tumor
 15 with a certain wavelength, laser therapy, you could
 16 cause a reaction inside the tumor that would result in
 17 the destruction of the tumor cells, photodynamic
 18 therapy. And a company out in California was
 19 developing both the laser and the drug to treat
 20 superficial cancers, like skin cancer, bladder cancer,
 21 lung cancer, that could be reached by a tube that you
 22 can put down the windpipe and into the major airway
 23 passages in the lung.
 24 I also worked with a contract research
 25 organization at that time and was a medical monitor

1 managing one of their large clinical trials that they
2 were helping another pharmaceutical company conduct.
3 Small companies don't have the resources to do all
4 this, so they contact out to what is called a contract
5 research organization to do all of that study
6 management for them.

7 That was a drug that was being looked at in the
8 treatment of myeloid leukemia and malignant melanoma.
9 I also worked with the company I'm currently working
10 with as a medical monitor and I, as a consultant,
11 managed a huge study of a new targeted therapy that was
12 designed to treat non-small cell lung cancer. It was
13 something that could be given by mouth. It was
14 absorbed by the body. It was currently in phase II,
15 III to see whether it was effective in the treatment of
16 lung cancer patients who were on chemotherapy or could
17 it be used alone on inpatients who have been through a
18 number of different lines of treatment for their
19 disease.

20 Serving as a medical monitor on this study, I
21 interacted with the different oncologists around the
22 county who was entering patients on the study, answered
23 questions about eligibility and made sure there were no
24 safety issues that needed to be looked at more
25 vigilantly and made sure they were getting the drugs

1 anemia associated with chemotherapy.
2 I've been with PAREXEL since 2006, January 2006
3 as a therapeutic area leader for oncology and
4 hematology.

5 To summarize, since 1990 I would say that
6 95 percent of the studies that I have been involved in
7 as well as the drugs I've helped develop or the
8 supportive care drugs that I worked on have been
9 inpatients over the age of 18. I'm board certified in
10 hematology/oncology pediatrics but for the last
11 18 years my professional career has been basically
12 involved in understanding cancer in adult patients,
13 designing treatment programs for those patients and
14 evaluating the results of those treatment programs and
15 understanding more about their diseases and better ways
16 to treat them.

17 Q. During that time have you been also continuing
18 to treat patients?

19 A. I stopped any kind of patient care activities
20 in 1996.

21 Q. So from '96 --

22 A. I don't have any direct hands-on care
23 activities since 1996.

24 Q. What is a medical monitor?

25 A. A medical monitor is a physician trained in

1 that they needed to treat their patients.

2 While I was doing that as a consultant, I was
3 also doing consulting work for Hoffman LaRoche and at
4 that time was working on the development and eventual
5 approval of a brand new drug that was developed to
6 treat lymphoma, a real breakthrough, because that drug
7 when given with chemotherapy and for the first time in
8 about 25 years it really improved response rates, the
9 remission duration rates as well as survival of
10 patients with non-Hodgkin, H-O-D-G-K-I-N, lymphoma.

11 So I was involved in the whole process of
12 completing those clinical trials and helping get that
13 drug approved primarily in Europe first before it got
14 approved in the United States. It got approved in the
15 United States three years later.

16 Then I became full-time at Hoffman LaRoche in
17 about 2003 I think and was working on the lymphoma
18 project but also was working on another area of great
19 interest, and that was the use of an agent that is
20 actually a mimic of the same hormone our body produces
21 to help the body make red blood cells to treat the
22 anemia that is caused by the chemotherapy. I helped
23 that drug.

24 In 2004 I moved to Johnson and Johnson where I
25 was working on that same class of agents to treat the

1 oncology. For example, if it's a cancer study, who is
2 available to interact with the doctors at the clinics,
3 at the hospital who are actually treating their
4 patients on a particular clinical study. There are
5 questions that come up about whether a patient might be
6 eligible for the study, does the patient meet the
7 eligibility criteria for this drug in this indication,
8 do they have a specific diagnosis, do they have that
9 stage of disease, how many kinds of prior therapies
10 have they had, is their clinical condition adequate,
11 are the available tissues there for review. All of
12 those things are major questions, eligible questions
13 that come up all the time.

14 There is a lot of interaction with study nurse
15 coordinators that work with the oncologist at a
16 particular clinic or cancer hospital who may have
17 questions about the administration of the new drug
18 intravenously or maybe a better way to keep it stored.

19 Other things that come up are safety issues, a
20 patient has some adverse effect of treatment and there
21 was a question of whether it was caused by a new drug
22 or whether it was part of the disease.

23 The medical monitor also reviews a lot of the
24 safety reports. If a patient has some kind of adverse
25 event and it is a serious adverse event, a report has

1 to be filled out promptly and a determination has to be
2 made about whether that adverse event is related to the
3 drug or not related to the drug because if it is, a
4 report has to be sent in to the FDA. Other
5 investigators using that drug have to be alerted to the
6 fact. So that is a major role of a medical monitor is
7 to evaluate safety.

8 The monitor also looks at some of the
9 laboratory data coming in to make sure things are not
10 alarming or off the charts that might be related to the
11 drug itself.

12 Q. You had indicated that in one of your
13 positions, I guess Hoffman LaRoche, you came up with
14 something for the first time in 25 years that effected
15 various rates?

16 A. Yes.

17 Q. Tell me about the response rate. How did it
18 effect the response rate?

19 A. It improved it. The study was taking
20 conventional chemotherapy for the treatment of
21 non-Hodgkin lymphoma, which was -- had been used for
22 25 years, variations of it had to be used, attempts to
23 make it more toxic or more intense weren't better and
24 in the '90s people were available to develop a
25 monoclonal antibody. This monoclonal antibody, think

1 of it as a missile targeted to a specific target on the
2 lymphoma cell. This monoclonal antibody would
3 actually identify this target on the lymphoma cell,
4 attach to it and then set into motion a series of
5 events that would cause the destruction of that tumor
6 cell. And it was really like a targeted missile that
7 would effect that tumor cell rather than normal cells.
8 In a controlled trial patients were either given the
9 standard therapy or they were given the standard
10 therapy plus this monoclonal antibody, and the
11 response rates were statistically significantly better
12 because the numbers were large enough to show there was
13 a statistically chance improvement in the response
14 rate. The duration of that response in the patients
15 getting the monoclonal antibody and chemotherapy were
16 significantly better and the overall survival was
17 significantly better in the patients receiving
18 combination therapy monoclonal antibody.

19 Q. When you say "significantly better" what are
20 the rates we're talking about?

21 A. Response rates of over 75, 80 percent,
22 five-year survivals. Now it is even a seven-year
23 survival because recent update on the study is in the
24 range of 65 percent, and if you've survived lymphoma
25 for two years or more after your treatment has been

1 discontinued, chances are it's not going to come back
2 again.

3 Q. What was the difference between the treated
4 group and the controlled group?

5 A. 10 or 15 percent.

6 Q. So these were randomly?

7 A. Yes.

8 Q. So the people randomly assigned the new product
9 had a 15 percent better chance of surviving?

10 A. That's right.

11 Q. When I asked you about response rate -- and I
12 gather we just discussed survival rate?

13 A. I talked about the five-year survival rate. I
14 think I mentioned a number for the response rate. I
15 would really prefer to look at the document to give you
16 the exact numbers. I don't want to do something from
17 memory.

18 When I say there was a statistically
19 significant improvement in response rate, that's again
20 based on numbers of patients empowering the difference,
21 it's not by chance, and response is clearly evaluated.
22 It's not I feel better, gee, my tumor went away. It's
23 demonstration that there is no tumor based on physical
24 exam, medical imaging studies. That's what's needed to
25 quantify a response. You can tell how long the

1 response lasts by measuring the time from when it
2 occurred to when the disease comes back again. So we
3 have another measure, very important time to tumor
4 progress, or time to disease progression and that was
5 significantly better in the patient who got the
6 chemotherapy plus the monoclonal antibody. And the
7 same is true in a study that's been followed for over
8 seven years, which is a long time for a study.

9 So each one of those major end points,
10 response, but more important is survival, that is the
11 key thing, did you live or not, and survival was
12 significantly better.

13 Q. That goes for remission as well?

14 A. Remission was better. More important, a lot of
15 people go into remission but it doesn't last long and
16 the disease comes back. They get treated some other
17 kind of treatment. They go into remission but it
18 doesn't last long and often the second time around it
19 lasts shorter. These are patients who have never been
20 treated before and their response rates were better in
21 the group who received chemotherapy and monoclonal
22 antibody. Their time to tumor progression was longer
23 significantly and proportion of patients alive after
24 five, seven years was significantly higher in that
25 group.

Page 38

1 Q. How do people qualify to be in or out of such a
2 study?
3 A. For that particular study they had to have a
4 certain kind of non-Hodgkin lymphoma. It was the
5 aggressive kind. It had to be a lymphoma that
6 expressed the target of the monoclonal antibody. They
7 had to have a B cell lymphoma and they had to meet the
8 other eligibility criteria of the study relating to the
9 age, physical examination, organ function and of course
10 they had to provide consent to go on to the study.
11 Q. What happened to the people who didn't qualify
12 for the study?
13 A. They got treated some other kind of therapy for
14 non-Hodgkin lymphoma. Some patients wish not to go on
15 a clinical trial. Medical oncology, 90 percent,
16 95 percent of patients don't want to be enrolled in a
17 clinical trial.
18 Q. Why is that?
19 A. They want to get something that is going to be
20 effective. They don't want to be randomized perhaps
21 placebo. They don't want to have to travel to a major
22 cancer center with all of the inconvenience.
23 It's interesting in pediatric oncology. It's
24 reverse, 95 to 100 percent of children are enrolled in
25 a cancer center or international trial.

Page 39

1 Q. What is the difference?
2 A. Parents have a greater control over their
3 children and are responsible for them. An individual
4 may or may not wish to have any kind of treatment.
5 Q. How do the survival and remission and response
6 rates in the pediatric trials compare to those in the
7 adult trials?
8 A. Again, it would depend on what tumor you're
9 talking about. I can't give you a broad number for all
10 pediatric cancer. It includes many, many different
11 types of cancer, so if you would like to ask me about a
12 particular type of cancer, I'd be happy to address
13 that.
14 Q. Let's take Hodgkin lymphoma.
15 A. That isn't what I was talking about.
16 Q. What were you talking about?
17 A. Non-Hodgkin lymphoma.
18 Let me take acute lymphoblastic leukemia. I
19 would pick that because it is the most common
20 malignancy in children, 35, 30 to 35 percent of cancer
21 in children. Today's chemotherapy, the complete
22 remission rates are over 95 to 98 percent. The
23 patients who are alive and well and without relapse of
24 their leukemia three years later depends a little bit
25 on some of the disease factors or patient factors, but

Page 40

1 overall the cure rate of acute lymphoblastic leukemia
2 today is 80 percent. Some patients do better than
3 that.
4 Q. Is that unique for various types of cancers?
5 Is that a high rate or low?
6 A. Very high rate. There are Hodgkin diseases
7 that have a cure rate of 90 percent in children.
8 Certain solid tumors in children, like kidney tumors,
9 also have a very high cure rate. But there are other
10 tumor types that have been more difficult to cure,
11 certain bone tumors, certain tumors of the central
12 nervous system, certain brain tumors. So it's not
13 uniform, but acute lymphoblastic leukemia I think is
14 the model that we use to show that with clinical
15 trials, clinical research, learning more about the
16 biology of the disease, understanding what causes it,
17 going after specific targets of the disease,
18 understanding that not all patients with lymphoblastic
19 leukemia are the same. Some patients don't need as
20 much aggressive therapy as others, so you can minimize
21 the toxicity, maximize the efficacy and decrease a lot
22 of the toxic effects of therapy.
23 And I have been involved in a lot of studies
24 and there are other patients who may need more
25 aggressive therapy if you have a chance to cure their

Page 41

1 disease.
2 Q. Is pediatric --
3 MR. J. TURNER: Let me try to approach it this
4 way.
5 Q. The field of pediatric oncology, does it have
6 the reputation of being generally more successful in
7 the treatment it provides than the general level of
8 cancer treatments?
9 A. Generally as a general statement that's true.
10 Part of it relates to the nature of tumors in children
11 compared to adults. Lymphoblastic leukemia is much
12 more responsive to treatment than pancreatic cancer is.
13 Fortunately we don't see pancreatic cancer in children.
14 It's the nature of the tumor and available therapies we
15 have for it. Tumors are very responsive and others
16 don't respond at all. You can't cut out leukemia. You
17 can't do surgery on lymphoma unless it is a unique
18 unusual circumstance, but you can't go after all the
19 leukemia cells in the body which may measure, if you
20 like numbers, maybe at the time of diagnosis there are
21 10 to 11th power, okay, ten to the 11th power tumor
22 cells.
23 Q. That's when it starts to manifest itself?
24 A. That's when it manifests.
25 Q. When it's ten to the fifth power --

1 A. You're in remission.
 2 Q. What if you haven't had any that expressed
 3 itself yet?
 4 A. It would be very -- it's at the level of
 5 detection by going into the bone marrow or the blood
 6 and getting cells and then doing very special tests to
 7 see whether you can see the leukemic clone of cells.
 8 That would be the level of detection.
 9 Q. So maybe ten to the fourth you might?
 10 A. Trouble.
 11 Q. Trouble?
 12 A. Trouble.
 13 Q. Is there anything that can be done for people
 14 when they're at ten to the fourth or smaller that would
 15 help them not go to ten to the 11th?
 16 A. We're just learning about what we call minimal
 17 residual disease in patients who have been treated to
 18 see if we get the number of leukemic cells down to that
 19 lower level.
 20 Q. If you had them up and were bringing them down?
 21 A. We bring them down. We don't go in and do bone
 22 marrows on kids in the third grade just to see if they
 23 have ten to the third.
 24 Q. Before you ever have a manifestation, if you
 25 have somebody who is going to eventually have ten to

1 you're looking for something like polyps?
 2 A. We also know that some patients may be more
 3 susceptible and at higher risks. If a woman's mother
 4 had breast cancer, a small proportion of woman inherit
 5 that breast cancer from their mother and you can look
 6 for that gene that increases your risk of developing
 7 breast cancer.
 8 Q. Let me ask you about these phase studies that
 9 you have described. You had mentioned what you call
 10 phase II and III studies.
 11 A. Yes.
 12 Q. Could you give sort of a brief orienting
 13 summary of each of those?
 14 A. I'd be happy to. There is a little bit of a
 15 preface though because -- I'll limit it to oncology.
 16 Q. Yes. This is limited to oncology.
 17 A. Because there are differences. Before we get
 18 to phase I in oncology, we do what we call non-clinical
 19 studies. They can be done in what we call in vivo,
 20 which means in glass, like a petri dish or test tube
 21 where we take cancer cells, not necessarily from the
 22 patient, but cancer cells and see if certain agents
 23 have activity against them, cause their death and stop
 24 their proliferation. We look at how these new agents
 25 might work in specific metabolic pathways inside the

1 the 11th and they're going to start at ten to the one
 2 and build up; is that right?
 3 A. That can happen but in leukemia that is not a
 4 good model. There are other models to take people at
 5 risk.
 6 Q. How would a model like that work?
 7 A. Someone with a family history of polyps in
 8 their colon, grandfather had polyps and he developed
 9 colon cancer. Gentleman's father also had colon cancer
 10 and had polyps and we know polyps can develop into
 11 colon cancer, so they should have frequent
 12 colonoscopies at an early age and have the polyps
 13 excised and examined under the microscope to make sure
 14 it hasn't turned into a malignancy. We don't take out
 15 his colon, but we follow him carefully.
 16 That's why we do mammographies in women,
 17 because early detection, particularly of solid tumors,
 18 is very important for outcome.
 19 Q. But let me ask this question then. There is a
 20 point at which in this case you said ten to the 11th in
 21 every one of the diseases in cancer has a point which
 22 it can be detected?
 23 A. It's different for all, but correct.
 24 Q. Before that there is a point where the disease
 25 potential can't be detected necessarily. That's when

1 cancer cell. We can take tumor cells and inject them
 2 into mice or other rodents or other animals and treat
 3 them with these new agents to see whether we get
 4 evidence of shrinkage of the tumor or disappearance and
 5 we can look at different doses of the drug, give it in
 6 different ways, intravenously, orally or directly into
 7 the different cavities of the body.
 8 Once from the animal studies we have an idea
 9 about some of the safety features of the drug, what
 10 kind of toxicity does it cause, an idea about how its
 11 metabolized in the animals, about how it's excreted
 12 activity against different type of tumors, we take a
 13 much lower dose that we looked at in the animals and do
 14 what -- we do our first phase I study in cancer
 15 patients.
 16 But because we have active, approved, safe and
 17 effective therapies for cancer patients, we can't take
 18 a previously undiagnosed patient with colorectal cancer
 19 who would be a candidate for chemotherapy and put them
 20 on a phase I study. That is unethical. I don't know
 21 anything about the safety of the drug, I don't know
 22 what the right dose should be and I don't have any
 23 idea, I have no idea about whether it would be
 24 effective in colon cancer.
 25 So in phase I my aim is or our aim is to learn

1 a lot about the safety of the drug and what its side
 2 effects are in different tissues and organs of the
 3 body, effect on the blood, liver, the heart, lungs,
 4 kidneys, GI tract, all of those things are looked at.
 5 So safety is one of the most important things we do in
 6 phase I.

7 Another thing we do in phase I is to determine
 8 what the effective dose is going to be when we move
 9 into the next phase of clinical trials. So we start
 10 off with low doses and after three or six patients, we
 11 move the dose up and move it up again and keep moving
 12 up until we get what we call dose limiting toxicity,
 13 which means that we've identified certain kind of
 14 adverse effects that we will consider limiting in terms
 15 of whether we can advance the dose any further.

16 Once we've established that, we determine what
 17 we call the maximum tolerated dose and either that or
 18 one dose level lower is what's used in the next phase
 19 of a study, which we call phase II. In phase II our
 20 goal is to see whether the drug at that dose level has
 21 activity against either a single cancer type or
 22 multiple cancer types.

23 In the phase I all of these patients have been
 24 previously treated, they all have measurable disease,
 25 they have been diagnosed with cancer. They're not

1 often it's double blind, randomized, controlled trial
 2 where everyone is getting the same basic chemotherapy,
 3 for example, for non-small cell lung cancer and
 4 patients are going to be randomly assigned to either
 5 that plus a placebo, standard chemotherapy plus
 6 placebo, or standard chemo though brand-new targeted
 7 therapy directed against the specific target in the
 8 lung cancer cell.

9 On the surface there may be receptors. Think
 10 of it as a key in the lock and the key is this new
 11 targeted therapy. So we have the lock is the receptor
 12 on a non-small cell lung cancer cell and the new drug,
 13 which is something you can take by mouth, is directed
 14 against that target specifically. And if you don't
 15 express the target -- and now we know if you don't
 16 express it in a very special way where it's got
 17 changes, mutations, that drug isn't going to work. It
 18 can be a monoclonal antibody, it can be a small
 19 molecule, you can take by both and what you can do then
 20 if it's a little pill, some patients can get a placebo,
 21 other patients can get a new drug and see what kind of
 22 response rates they have, what kind --

23 Q. This is in phase III?

24 A. This is phase III. Response rates are not as
 25 important though, but what really is important is you

1 getting anything else but the experimental agent
 2 usually. Sometimes you might give a conventional
 3 therapeutic agent, but not often.

4 In phase II once you establish that dose, then
 5 you are looking for efficacy, you're looking for a
 6 response, tumor shrinkage primarily. You might look at
 7 a number of different tumor types, depends on what type
 8 of drug it might be and how it works best. If you see
 9 evidence of activity in a phase II, you might use it
 10 with other conventional therapeutic agents to see
 11 whether it is safe and also effective. There sometimes
 12 is a way to do a randomized trial in phase II where
 13 patients could go on conventional chemotherapy with the
 14 new agent versus conventional chemotherapy alone and
 15 look for response time to tumor progression.

16 Q. That study that you described for Hoffman
 17 LaRoche, that came up with the breakthrough?

18 A. It was a phase III trial. Again, in phase II
 19 you can take previously untreated patients, if you're
 20 comparing standard therapy alone with standard therapy
 21 plus the new agent, that would be reasonable because no
 22 one is going to be denied what is the standard of care,
 23 but in phase III, often you take the standard of care
 24 and in a randomized way, doesn't have to be double
 25 blind, but depends on the drug, can be open label, but

1 have prolonged the survival of that patient. You
 2 prolong the time from when their diagnosis has been
 3 made until their tumor progresses, so these are
 4 patients who have advanced stage disease generally.

5 Or also do it in a patient who had surgery,
 6 disease is gone, breast cancer, after surgery, they
 7 don't have the lump or have their breast but we know
 8 that is not enough, so we treat them with additional
 9 therapy to prevent the disease from coming back again
 10 because there are a few cells we can't see. So a
 11 number of different stages of the disease based on the
 12 extent of the disease but, again, the end points are in
 13 phase III improvement in what we call progression free
 14 survival or overall survival, that is what we're
 15 looking for. Response rates are not as important in
 16 phase III.

17 Q. What does it cost to do these studies?

18 A. From the beginning, from the non-clinical?

19 Q. You have a promising item.

20 A. Let's say you have gone through testing of 100
 21 different compounds in the clinic and you see one that
 22 might be better, so there is expense there. It may
 23 cost upwards of a hundred million dollars to go from
 24 the beginning to the time a drug goes through phase
 25 III.

1 Q. You mentioned in your report that out of 5,000
2 promising agents, maybe one would make it to the point
3 of going through a clinical trial like this?

4 A. I know -- yes.

5 Q. We don't have to put a lot of effort into
6 finding 5,000 promising agents discovered in the
7 laboratory, entering non-clinical testing, five enter
8 phase I and one is approved?

9 A. It goes through phase III randomized pivotal
10 trial and gets approved.

11 Q. Does that mean you have proved that 4,999 don't
12 work?

13 A. I think some good drugs may be lost in the
14 process. I don't think we lost too many but those are
15 the numbers that we see. So it's a very small number
16 that make it all the way to approval.

17 Q. I just want to clarify. You got the end point
18 of what I was asking, which is some might be lost, but
19 is it a conclusion of the process that starts with
20 5,000 promising agents and ends up with one approval,
21 the process, the logical process that you're engaged
22 in, can you conclude from that process that the 4,999
23 have been proven not to be useful?

24 A. If they don't pass certain hurdles along the
25 process, they will be discarded. You would like to

1 better. That wasn't much, but it was better than the
2 current available therapy. In my mind six weeks of
3 improvement in my lifespan when I have to spend half of
4 it in the hospital getting treated is not such a great
5 breakthrough, so that is a disease that really needs
6 help but there was a drug that provided something
7 better than the standard at the day.

8 Q. Let me take a side issue and ask you about
9 Justice Ginsberg. Did you read anything about her
10 situation? This is a side issue completely but what is
11 your thoughts?

12 A. I can't comment. I don't know the extent of
13 her disease. They thought they caught it earlier but I
14 read it in The New York Times. She had a great
15 surgeon. I know him very well.

16 MR. J. TURNER: Just a side issue, I didn't
17 mean to take us off the record here, off the focus.

18 Q. In the time you have been involved with cancer
19 as a treating doctor and then doing the research you
20 described, are there any drugs that are used for cancer
21 therapy that are, quote, off label?

22 A. Depends what part of the world you're in.

23 Q. In the United States?

24 A. In the United States, yes.

25 Q. What is the story about that? How does that

1 discard them, recall, before you invest too many
2 patients, you don't want to waste resources today.
3 They're limited.

4 Q. Let me do a comparison and see -- I'm trying
5 to -- I don't know if it's a philosophical point or
6 logical point, but when you get done with your process,
7 5,000 promising agents, one of which went through the
8 whole process, you feel confident that you have
9 established something that is useful and meets the
10 criteria that we would like to see in the therapeutic
11 world?

12 A. Absolutely, yes, whether it's going to be
13 blockbuster breakthrough that really improves outcome,
14 not necessarily. There have been some drugs that have
15 been approved to treat diseases that are horrible. In
16 my mind pancreatic cancer is the worst cancer that
17 anyone can have. It's diagnosed late and there's not
18 effective curative therapy, but a drug that was
19 approved in the turn of the century to treat pancreatic
20 cancer was a breakthrough --

21 Q. Turn of which century, from --

22 A. 1990 --

23 Q. 1990 to 2000?

24 A. Yes. It improved survival compared to the
25 control arm by maybe six weeks, and quality of life was

1 work?

2 A. For a drug to be approved, it has to go through
3 that process that we just talked about. So that the
4 label is based upon the clinical trial that was done
5 for a certain disease type, certain cancer, certain
6 stage of the disease, a certain phase of its treatment.
7 Is it second line after somebody has had primary
8 therapy or is it first line. So that the label has --
9 these are the indications for its use.

10 Oncologists are studious people. They're
11 learning all the time and read the medical literature
12 and go to medical meetings and they hear a presentation
13 about that drug being used for not lung cancer but
14 pancreatic cancer. Although it's not been through the
15 pivotal trial to get approval for pancreatic cancer,
16 the aim of the study is to get there eventually. That
17 oncologist knows it may be helpful in his patient with
18 pancreatic cancer and doesn't have anything else and he
19 can write out a prescription.

20 Medicaid is going to approve off label drugs of
21 some drugs in phase II, early stage III.

22 Q. Are all the off label uses of drugs in phase
23 trials and new indication?

24 A. I don't think you can take something that no
25 one has ever looked at before and hope to use it in the

Page 54

1 patient but there should be some evidence, not pivotal
 2 trial, enough to get approval, that it is safe. In
 3 Europe you can't do that. If a drug isn't approved by
 4 the European National Health Authority, the doctors
 5 can't write a prescription and get it covered by the
 6 health agencies in that country unless they're
 7 financially well off and go get it somewhere else.
 8 So we have a lot of off label use but there has
 9 been some liberalization about that, depending on other
 10 studies, to support the use of the drug. Just last
 11 week Medicaid -- I always get mixed up.
 12 Q. Medicaid is old people over 65.
 13 A. Us old people over 65. There is a drug called
 14 Avastin, A-V-A-S-T-I-N, it's an antiangiogenic agent,
 15 A-N-G-I-O-G-E-N-I-C, and it's a monoclonal antibody
 16 and it goes after the factor that actually stimulates
 17 new blood vessel formation. It's approved for the use
 18 with chemotherapy in colorectal cancer and recently
 19 approved in non-small cell lung cancer and breast
 20 cancer but there is evidence to suggest it may be
 21 helpful in treating brain tumors and looks like that
 22 agency, Medicaid, is going to permit physicians to
 23 write prescriptions to use it with chemotherapy in
 24 brain tumors.
 25 Q. When you say "permit" --

Page 55

1 A. They're going to reimburse for it, that's
 2 right. But it's interesting, in the United States if
 3 you're on a clinical trial, a lot of the health care
 4 providers are obligated to cover the cost of clinical
 5 trials.
 6 Q. Aren't there other constraints by what they
 7 call experimental drugs?
 8 A. Some may be, but generally the understanding in
 9 many states is if a patient is enrolled in a clinical
 10 trial, and I believe clinical trials are good for
 11 patients because they get very, very careful care,
 12 followed very carefully, seen more frequently,
 13 responses are evaluated, safety issues are taken care
 14 of and get all the other supportive care that a cancer
 15 patient needs. Many carriers are actually covering the
 16 cost of clinical trial. They don't provide the drugs.
 17 The drug company is going to provide the drug, but what
 18 the health insurance carrier will cover is a lot of the
 19 laboratory expenses, the clinic expenses and even the
 20 medical imaging expenses which would generally be
 21 standard. Clinical research isn't hard to do in the
 22 country. It's getting patients to be willing to
 23 participate.
 24 Q. Do you know how much off label use there is?
 25 A. Varies from drug to drug. I don't have a

Page 56

1 number off the top of my head.
 2 Q. Is there off label use by people writing
 3 prescriptions for things that they will not have
 4 reimbursement for from, say, Medicaid or Medicare?
 5 A. Probably not.
 6 Q. Okay. I wanted to ask you, you gave an
 7 indication of materials that you reviewed getting
 8 prepared for this process.
 9 A. Yes.
 10 Q. Could you just go through that again very
 11 quickly?
 12 A. Again, this is not in specific order but --
 13 Q. You don't have to do it extensively because we
 14 have it in writing, but just a quick rough summary.
 15 A. I reviewed the literature citations that were
 16 provided by Daniel Chapter One. I have them listed all
 17 here.
 18 I reviewed the deposition testimony of James
 19 and Tricia.
 20 I reviewed the transcripts from two of their
 21 Healthwatch Radio Programs that were done in July of
 22 this year.
 23 I reviewed the testimonials of the 30 patients,
 24 some who had cancer, some who didn't. These were
 25 testimonials submitted by patients or sometimes

Page 57

1 relatives or sometimes friends of the patients who had
 2 used the Daniel Chapter One products.
 3 I mentioned the complaint. I reviewed their
 4 bioguide, Biomolecular Guide for Daniel Chapter One
 5 listing all of the different products that they have in
 6 their company.
 7 I reviewed recently -- I don't have it in my
 8 report because I think it came in after I submitted it.
 9 It was an extensive listing of all the different
 10 diseases, not just cancer, but every disease imaginable
 11 or condition for which an individual could take one or
 12 several of Daniel Chapter One.
 13 Q. Do you know what that document was?
 14 A. Something for physicians, simple guide for
 15 doctors, so it was really geared for physicians to look
 16 this up and say, okay, I have a patient with cancer,
 17 which is a lot of different disorders, but this one had
 18 cancer as one single entity and listed a number of
 19 different products.
 20 Q. Who prepared this document?
 21 A. Daniel Chapter One.
 22 Q. Is that something you can provide to us?
 23 MR. PAYNTER: I think they were supposed to
 24 send it to you. So I have to check with David to see
 25 whether they did.

1 MR. J. TURNER: I don't recognize it.
2 MR. PAYNTER: It would have been in the last
3 day or so.

4 MR. J. TURNER: I don't recognize that, so --
5 A. I did review yesterday, because I just got them
6 yesterday, the expert reports from a number of the
7 experts for Daniel Chapter One. Then I did my own
8 literature search, and sources of that are in my
9 report. I have specific references supporting the four
10 different sections of my report for Bio*Shark, GDU,
11 BioMixx and 7 Herb Formula or in the appendix with the
12 specific references supporting those segments of my
13 report.

14 Then I did extensive searches of Google and
15 Memorial Sloan Kettering, Dana Farber, I used Stanford
16 HighWire, PubMed, Clinical Trials.gov gives you all the
17 clinical trials ongoing by different disease entities.

18 The journals I read that I get, subscribe to
19 them that are listed here. That includes Journal of
20 Clinical Oncology, New England Journal of Medicine,
21 British Journal of Hematology. I was on the editorial
22 board of that one and another, Supportive Care in
23 Oncology, which covers a lot of the alternative and
24 complimentary medicines. A very helpful book that was
25 written by Barry Cassileth and Lucarelli at Memorial

1 Sloan Kettering, "Herb Drug Interactions in Oncology."
2 It lists a lot of the different individual compounds in
3 some of the DCO, Daniel Chapter One, products, just
4 from some literature, if it's supported, pre-clinical,
5 non-clinical studies, if any were done.

6 Then my own experience, because I've done a lot
7 of work in the field of alternative medicine when I was
8 at Cancer Treatment Centers of America, and believe it
9 or not, we still see protocols and requests for
10 proposals coming from the pharmaceutical industry or
11 the neutropharaceuticals industry asking us to help
12 them design and conduct clinical trials looking at
13 alternative therapies in the treatment of cancer. So
14 we're doing that today.

15 Q. Can you give me an indication of --

16 A. I can't give you the specific names. I can
17 give you a general overview. This is a product that
18 has come from a mushroom, mushroom extract.

19 Q. Is that the one you mentioned?

20 A. No. I did that study at Cancer Treatment
21 Centers of America. This is another one that came from
22 a company. Confidentiality doesn't permit me to say
23 anymore, help us with phase I, II and beyond, looking
24 at product with conventional chemotherapy to see
25 whether patients might have tolerated treatment better,

1 less side effects and maybe have a better response to
2 disease progression.

3 So it was going to be phase I where you find
4 out what the best dose might be and look at
5 pharmacokinetics, K-I-N-E-T-I-C-S, where we see whether
6 there is any interaction between their product and the
7 conventional chemotherapy that might either have an
8 effect in keeping concentrations too high or lower in
9 their concentrations so they don't work.

10 Also seeing whether it might increase toxicity
11 of the chemotherapy or lower its efficacy and find out
12 what the best dose might be to move into a phase II
13 trial, which in this case can be randomized trial.
14 Patients would be randomized, in this case double blind
15 placebo controlled trial. You can find a liquid that
16 looks and tastes, buy it and randomized for
17 conventional chemotherapy for their disease with their
18 product or a placebo and see if you can meet the end
19 points and design the study so you have enough patients
20 in each arm to meet what you set up as a null,
21 N-U-L-L, hypothesis and say there is no difference
22 between response rates in patients getting mushroom
23 extract X or placebo. And you're basically going to
24 disprove the null hypothesis by showing there is a
25 statistical difference between the two that is not

1 based on chance alone. Then you've shown what we would
2 call reliable and competent evidence that this agent
3 actually increases the response rate in patients with
4 that particular disease.

5 (A recess was taken.)

6 Q. Couple of questions before we go on to the next
7 section, part two of the report. You've described a
8 fairly elaborate system for reviewing processing
9 agents. Is that because they tend to be toxic?

10 A. That is not the only reason. Safety is an
11 important part of the evaluation of a new drug, but the
12 efficacy is also important as well as the pharmacology,
13 pharmacokinetics.

14 Q. What is the pharmacokinetics?

15 A. Pharmacokinetics means how is the drug absorbed,
16 how is it distributed in the body, how and where is it
17 metabolized, where or how is it excreted, what's the
18 maximum level you can get in the blood, if you give it
19 by mouth, does it get absorbed. So what is its
20 bioavailability. If you give a compound by mouth and
21 it gets into the stomach and the stomach acids break it
22 down and activate it, you can't measure anything in the
23 blood. It may not be absorbed. There are certain
24 things that can't be absorbed, blocked.

25 Q. Is there a significant number of drugs that go

Page 62

1 through phase I, II and III studies, trials, that do
 2 not have a toxic component?
 3 MR. PAYNTER: I just object. In general or
 4 are we talking about oncology? Because you said --
 5 MR. J. TURNER: Make it oncology.
 6 A. Every drug has some kind of, you call it toxic,
 7 I would say some ad effect or adverse effect, yes.
 8 Q. Go ahead.
 9 A. It's okay.
 10 Q. If I didn't get the questions we talked about
 11 in the break, I'll get them at the end, but now we're
 12 going to go to that part of the report that's part two,
 13 "Scope of Work."
 14 You indicate that there are I think eight
 15 statements that you wrote here as you're looking for
 16 evidence to substantiate the following claims. Did you
 17 write "Bio*Shark inhibits tumor growth" as one of the
 18 claims?
 19 MR. PAYNTER: Objection.
 20 A. I wrote --
 21 MR. PAYNTER: What do you mean, did he
 22 physically write it or did he --
 23 A. What's in here I wrote.
 24 Q. What I'm asking you is, where did you get those
 25 words?

Page 63

1 A. They came from a section in the complaint. I
 2 don't recall the exact number.
 3 Q. Is that true for all of these?
 4 A. This is I think verbatim from the complaint.
 5 Q. From the complaint, okay. Actually, one of the
 6 questions I meant to ask you before we got to this, but
 7 that's a good beginning of that, I wanted to ask you if
 8 you had in your review of materials, had you reviewed
 9 any of the German monographs on herbs?
 10 A. Not the monographs, no.
 11 Q. Are you familiar with the monographs?
 12 A. I'm aware of them, I heard about them, but I
 13 did not read them.
 14 Q. Did you look at the United States Pharmacopeia
 15 on Herbs?
 16 A. Again, I'm aware of that but I did not read it.
 17 Q. How about the British Pharmacopeia?
 18 A. Did not read it.
 19 Q. Did you review the Complementary and
 20 Alternative Physician's Guide?
 21 A. Can you expand that? Which one?
 22 Q. It's published by Springhouse Publishing and
 23 it's the Guide to Complementary Physician Practice?
 24 A. I did not read that.
 25 Q. Did you review any material at all by Dr. James

Page 64

1 Duke?
 2 A. The only thing I read of Dr. Duke was his
 3 report. I did not read any of his listed publications.
 4 Q. You didn't look at the online database that he
 5 maintains at the U.S. Department of Agriculture on
 6 herbs?
 7 A. I did not.
 8 Q. I was going to ask, did you review anything
 9 from the American Botanical Council?
 10 A. No, I did not.
 11 Q. You indicated that you had reviewed -- I gather
 12 this list in your report is things that you reviewed.
 13 The part that says materials that I reviewed has a list
 14 of documents that apparently are those that were
 15 provided by -- given to you as having come from Daniel
 16 Chapter One. It's a list. Do you know what I'm
 17 speaking of here?
 18 A. No.
 19 Q. "I have also reviewed the following material
 20 provided to me by the FTC." Let me ask you about this.
 21 What did you learn from the transcripts of the radio
 22 programs?
 23 A. I learned that people with cancer called in,
 24 gave a brief capsule of their diagnosis or what they
 25 were advised to do and it might be surgery or might be

Page 65

1 radiation therapy or might be chemo or combinations,
 2 and they were given advice about what to do about their
 3 disease. Don't go through cancer therapy. Don't get
 4 radiation, chemotherapy is bad for you. Chemotherapy
 5 has never cured anybody. My relative had that and she
 6 died from it. There was advice being given to cancer
 7 patients about what they should do about the treatment
 8 of their disease. That was one thing I learned.
 9 Q. Let me ask, do we have transcripts of those?
 10 MR. PAYNTER: They would have all been
 11 produced.
 12 MR. J. TURNER: The transcripts themselves.
 13 A. That's what I learned. The rest was some other
 14 thing, discussing the products, but that is the primary
 15 bottom line thing that I learned from those radio
 16 programs.
 17 Q. The next thing was testimonials submitted by 30
 18 patients. How did you receive those 30 patients'
 19 testimonials?
 20 A. I think each of the patients had a one, two --
 21 one-page narrative of who they were, what their cancer
 22 was and what they did to treat it, what products they
 23 took and how they were benefited by it.
 24 Q. This was given to you by the FTC?
 25 A. Yes. Some of those testimonials appear in

1 other DCO materials on their web site or other of their
 2 documents.
 3 Q. Then continuing down it says articles -- can
 4 you find the place in your report -- you got that?
 5 A. Yes.
 6 Q. "Articles for research study of
 7 complimentary/alternative proprietary products in
 8 support of respondent's claim, (appendix III)."
 9 A. Yes.
 10 Q. What does it mean by alternative proprietary
 11 products?
 12 A. Well, I think that title came from DCO, but I
 13 don't think I wrote it that way. I think that's how
 14 they listed it in their responses.
 15 Q. Okay.
 16 A. So I don't know what they mean by
 17 complimentary/alternative proprietary products.
 18 Q. You have other cited articles and those are
 19 cited by whom?
 20 A. These are literature provided by DCO.
 21 Q. Then I wanted to ask you about some of those.
 22 That is the list I was looking for. Did you look at
 23 Dr. Nieper's "Revolution in Technology Medicine and
 24 Society"?
 25 A. I looked at all of these things here. I had a

1 beginning clinical trials to suggest that curcumin,
 2 which is from tumeric, may be -- may warrant additional
 3 studies to see if it can prevent particularly
 4 colorectal cancer. There have been a number of
 5 peer-reviewed articles suggesting that that particular
 6 compound, curcumin, is worthy of further investigation
 7 and I go into that in my report.
 8 Q. We're going to talk about that. Then there is
 9 one which is Foster, S. Echinacea, "Helping to Rebuild
 10 Your Immune System."
 11 A. No literature support -- this was just an
 12 opinion article with not very much supported data for
 13 what he is trying to say.
 14 Q. Do you have a sense of the immune's
 15 relationship to all of this dynamic that we're
 16 discussing?
 17 A. You made it sound so general, and it's much
 18 more specific.
 19 Q. Make it specific.
 20 A. The immune is important in fighting cancer, or
 21 the immune is suppressed in cancer patients, so if we
 22 beef up the immune, we can destroy the tumor, it's more
 23 complex than that.
 24 Q. These are not cancer people. These are just
 25 the whole world. If you beef up your immune, you'll be

1 stack of stuff.
 2 Q. What was your take away from the Nieper
 3 Revolution?
 4 A. I don't recall while I'm sitting here right
 5 now.
 6 Q. That's fine.
 7 A. I just don't recall.
 8 Q. On the Majeed M. Badmaev and Murray F. Tumeric
 9 and the Healing Curcuminoids, what was your take on
 10 that or take away from that?
 11 A. I'm going to make a general statement first and
 12 that is throughout this whole process. I relied on
 13 peer-reviewed articles that went through the normal
 14 process of review by experts and peers in the field.
 15 That's how we publish things in science. If an article
 16 contained reference to peer-reviewed articles, that was
 17 empty to me. If it was subjective review of the use of
 18 a product somewhere, like many of the pharmacopeias
 19 have without peer review, supporting data, to me the
 20 evidence was not as strong as somebody writing
 21 subjectively about their own opinions. That wasn't
 22 what I was relying upon.
 23 If I recall the Tumeric and Healing
 24 Curcuminoids, I will agree that there had been a number
 25 of very interesting non-clinical studies and some

1 healthier?
 2 A. As a general statement?
 3 Q. Yes.
 4 A. What if it's normal to begin with. Do you have
 5 to beef it up further to be healthier?
 6 Q. That is my question.
 7 A. I don't know.
 8 Q. Your argument would be if it's below normal,
 9 yes, but if it's normal we don't want to necessarily do
 10 that?
 11 A. Do you know what happens if you over beef up?
 12 You get auto immune, lupus, and maybe neurological
 13 disorders, so beefing it up, if it doesn't need to be
 14 beefed up, why do it?
 15 Let's beef up another system. Let's beef up
 16 the blood system. Hemoglobin in our body carries
 17 oxygen from the lungs to the tissues and then it
 18 carries the carbon dioxide back to the lungs and we
 19 breath it out. Normal hemoglobin for you is 14, 15, 14
 20 to 15 grams of hemoglobin per hundred MLs of your
 21 blood. Gee, let me make it up to 18, you'll be better
 22 because it's beefing it up. And you know what is going
 23 to happen, you'll clot something in your brain and have
 24 bad effects, so more isn't better. If it's too low,
 25 that is not good. Beefing it up may not be beneficial.

1 Q. You're saying just like the blood system, that
 2 would be true of the immune?
 3 A. In many respects, yes. If I have normal immune
 4 I don't need to have it beefed up unless I have
 5 deficiencies. There are some diseases where we talk
 6 about gamma globulins. They are the proteins that help
 7 the body fight viral infections, fungal infections,
 8 maybe important in identifying foreign substances in
 9 our body. There are diseases where you make too many
 10 gammaglobulin because the cells are abnormal and it's a
 11 disease called multiple myeloma.
 12 Q. Is cancer a disease?
 13 A. Of course.
 14 Q. And when you're at ten to the four, do you have
 15 cancer or not?
 16 A. You do not have cancer.
 17 Q. What do you have?
 18 A. I don't know what you have because I'm not
 19 sure -- ten to the four may remain that way for the
 20 next 40 years.
 21 Q. And --
 22 A. Cancer is a diagnosis based on physical
 23 findings, laboratory findings, medical imaging
 24 findings. It's not lurking where it's not detectible.
 25 Q. So people who have -- people who show up with

1 one cell becomes two. That is the growth rate. But at
 2 the same time there is an innate cell death rate. So
 3 some cells are dying. They go into what we call a
 4 programmed cell death.
 5 So cells are not constantly multiplying and
 6 dividing. There are some cells dying, multiplying and
 7 it may be balanced and it may remain ten to the three
 8 forever if that is the balancing effect.
 9 Q. What you're saying is in the whole universe of
 10 people that get ten to the three, some of them may be
 11 balanced?
 12 A. That's right. They may never have diagnosable
 13 cancer.
 14 Q. In the whole universe of people who get to the
 15 ten to the 11, is there anyone who never went to ten to
 16 the third?
 17 A. Of course. You don't just suddenly come up
 18 with --
 19 Q. You can't do that. So the universe of people
 20 who end up with tumors are people who started out
 21 probably somewhere below that and evolved to that?
 22 A. Yes, that's correct. What we're trying to do
 23 now is come up with molecular biological techniques to
 24 see if we can identify certain known abnormalities in
 25 cells that would go along with the development of a

1 cancer that is ten to the 11 I guess you said --
 2 A. That was one particular type. Let's not
 3 generalize. Cancer is one disease, we can't say that.
 4 We have to separate things.
 5 Q. Here is what I'm trying to understand. At a
 6 given moment you are able to diagnosis something as the
 7 disease cancer?
 8 A. When it reaches a certain size, when there is a
 9 certain number of cells in a mass that is detectible by
 10 some medical imaging, CT scan, MRI, a bone marrow test,
 11 biopsy.
 12 Q. Before that you're healthy?
 13 A. Yes.
 14 Q. So a given day you're at ten to the five and
 15 the next day you're something greater than that until
 16 it manifests yourself, you're healthy at that point?
 17 A. You can't say you're ten to the fourth one day
 18 and the next day you're ten to the fifth because
 19 different tumors and different malignancies grow at a
 20 different rate. There is also a rate where tumor cells
 21 may die.
 22 Going back to your example of ten to the fourth
 23 or third, there may be a balance. There are cells that
 24 are growing and multiplying -- let me answer the
 25 question. There are cells multiplying and dividing and

1 malignancy.
 2 Let me give you an example. There is a
 3 condition called chronic amyloid leukemia. There is an
 4 over production of white blood cells. It can go on for
 5 three, four, five years. Until recently there is a
 6 specific treatment to go after the molecular,
 7 biological defect in chronic amyloid leukemia, an
 8 abnormality in the chromosome where a piece of one
 9 chromosome hooks up to a piece of another chromosome,
 10 because they develop -- they dissolved it in
 11 Philadelphia. It's called the Philadelphia chromosome.
 12 People who have chronic amyloid leukemia, many of them,
 13 not all, have this Philadelphia chromosome.
 14 This new drug goes after the place where the
 15 two chromosome pieces are connected together and gets
 16 rid of the cells. And patients can be put into a
 17 remission where the white blood cell goes down to
 18 normal. You don't see the Philadelphia chromosome any
 19 longer and the next material level of making sure they
 20 don't have disease is you can't see any of the
 21 combination of the chromosome. There is a very fancy
 22 technique we can use for that. There is a limit of
 23 detection we can get down for that test, maybe ten to
 24 the minus one. So we can get down to very few cells.
 25 I guess you could screen people to see whether

