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IN THE COURT OF COMMON PLEAS  
CUYAHOGA COUNTY, OHIO

MICHELLE KASCHAK, et al.,  
Plaintiffs,

vs

Case No. CV 3551360

UHHS BEDFORD MEDICAL  
CENTER, et al.,

Defendants.

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DEPOSITION OF ARTHUR B. ZINN, M.D., Ph.D.  
THURSDAY, AUGUST 17, 2000

- - - - -

The deposition of ARTHUR B. ZINN, M.D.,  
Ph.D., the Witness herein, called by counsel on  
behalf of the Plaintiff for examination under the  
statute, taken before me, Vivian L. Gordon, a  
Registered Diplomate Reporter and Notary Public  
in and for the State of Ohio, pursuant to  
agreement of counsel, at the offices of Reminger  
& Reminger, The 113 St. Clair Building,  
Cleveland, Ohio, commencing at 1:30 o'clock p.m.  
on the day and date above set forth.

1 APPEARANCES:

2

3 On behalf of the Plaintiff

Becker & Mishkind

4 BY: HOWARD D. MISHKIND, ESQ.

Skylight Office Tower Suite 660

5 Cleveland, Ohio 44113

6 On behalf of the Defendant University Hospitals

Moscarino & Treu

7 BY: KEVIN M. NORCHI, ESQ.

630 Hanna Building

8 Cleveland, Ohio 44115

9 On behalf of the Witness:

Reminger & Reminger

10 BY: P.J. MALNAR, ESQ.

The 113 St. Clair Building

11 Cleveland, Ohio 44113

12 ALSO PRESENT:

Michelle Kaschak

13 Michael Kaschak

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1           ARTHUR B. ZINN, M.D., Ph.D., a witness  
2     herein, called for examination, as provided by  
3     the Ohio Rules of Civil Procedure, being by me  
4     first duly sworn, as hereinafter certified, was  
5     deposed and said as follows:

6           EXAMINATION OF ARTHUR B. ZINN, M.D., Ph.D.  
7     BY MR. MISHKIND:

8           MR. MISHKIND: The record should  
9     reflect that we are here today on August 17th,  
10    2000. The purpose of this deposition is to  
11    obtain the facts and information known to Dr.  
12    Arthur Zinn who was involved in certain aspects  
13    of Megan Kaschak's care at or around the time of  
14    her demise.

15           The deposition is being taken by  
16    agreement. Ms. Malnar has arranged to have  
17    Dr. Zinn here. Dr. Zinn has made himself  
18    available without the issuance of a subpoena to  
19    answer questions. The Kaschaks are also here.

20           Certainly no issues of waiver of  
21    privilege -- there are no privileges that are  
22    being withheld.

23           MS. MALNAR: Fair enough.

24           Q. Let's start out with an easy question  
25    for you. Tell us who you are.

1           A.     My name is Arthur Zinn.

2           Q.     And what is your occupation?

3           A.     I'm a medical geneticist.

4           Q.     Could you trace briefly for me your  
5 educational background.

6           A.     I grew up in New York City, went to  
7 public schools, went to college and got a  
8 bachelor of arts in chemistry from Brandeis. I  
9 came to Case Western Reserve University where I  
10 got my M.D. and Ph.D. in biochemistry. I then  
11 went to the University of Minnesota where I  
12 trained in pediatrics. I then went to Yale  
13 University where I trained in human genetics.

14          Q.     Where is your practice situated  
15 currently?

16          A.     My main office is at University  
17 Hospitals of Cleveland.

18          Q.     And just for housekeeping purposes,  
19 are you an employee of University Hospitals or  
20 are you employed by some other entity?

21          A.     My paycheck comes from Case Western  
22 Reserve University.

23          Q.     Are you affiliated with some practice  
24 group?

25          A.     I think I am now. I think it's called

1 University Genetics, Inc. I'm not sure there was  
2 such an Inc. when I spoke with the Kaschaks.

3 Q. Your M.D. degree from Case was  
4 obtained in what year, approximately?

5 A. '76.

6 Q. Did you then immediately pursue your  
7 Ph.D.?

8 A. They were done concurrently.

9 Q. Dual degrees?

10 A. I was awarded the Ph.D. in January  
11 '77.

12 Q. Your training then at University of  
13 Minnesota was in what?

14 A. Pediatrics.

15 Q. Was it a straight residency in  
16 pediatrics?

17 A. It was a residency in pediatrics.

18 Q. How many years were you there?

19 A. About two and a half.

20 Q. And then at Yale, it was in human  
21 genetics?

22 A. Correct.

23 Q. How many years were you there, sir?

24 A. A little over two.

25 Q. At the beginning of the deposition,

1     you said that you are a medical geneticist.

2             A.     Correct.

3             Q.     Is there a board certification in that  
4     subspecialty?

5             A.     Yes.

6             Q.     Are you board certified?

7             A.     I'm certified by the American Board of  
8     Medical Genetics in both clinical genetics and  
9     clinical biochemical genetics.

10            Q.     Do *you* have any other board  
11     certification outside of the area of genetics?

12            A.     No.

13                   MS. MALNAR: One thing I should have  
14     mentioned to you, if you let Mr. Mishkind finish  
15     his questions before you start your answers, that  
16     will make things easier.

17            Q.     Do *you* have a relatively recent or  
18     current curriculum vitae?

19            A.     Yes.

20            Q.     Do you have it with you?

21            A.     No.

22            Q.     Would it be difficult for you to make  
23     it available to Ms. Malnar, assuming she doesn't  
24     already have it in her hands?

25            A.     I can do that.

1           Q.     If you would, please, I would  
2     appreciate it.

3                     Your employer then today is Case  
4     Western Reserve University or is it University  
5     Genetics, Inc.?

6           A.     Case Western Reserve.

7           Q.     Your office is located where?

8           A.     In University Hospitals of Cleveland.

9           Q.     In what department or division is the  
10    office located at the hospital?

11          A.     The Center for Human Genetics.

12          Q.     After you finished your training at  
13    Yale, did you then come to University Hospitals?

14          A.     I then came to Cleveland to my present  
15    position.

16          Q.     You have been in this present position  
17    for how many years, sir?

18          A.     Since 1982.

19          Q.     The Center for Human Genetics consists  
20    of you and how many other geneticists are in that  
21    division?

22          A.     It's not a division, it's a  
23    department. And it's a department, I think, of  
24    about 25 faculty, not all of whom have clinical  
25    responsibility.

1 Q. Can you tell me the names of those  
2 that do have clinical responsibility?

3 A. When?

4 Q. **Good** question. At or around the time  
5 of the events that concern Megan back in January,  
6 February, '97.

7 A. Suzanne Cassidy, Nathaniel Robin,  
8 Matt Warman, and Georgia Wiesner are the other  
9 physicians. There are other people who have  
10 clinical responsibility, but they are primarily  
11 laboratory based.

12 Q. In terms of the genetic issues that  
13 were involved in Megan's case, were you the only  
14 medical geneticist that was involved or were  
15 there others?

16 A. First of all, I was not involved.  
17 Second, the patient was seen by Nat Robin in  
18 consultation.

19 Q. Is Dr. Robin still in the department?

20 A. Yes.

21 Q. When did you become involved in one  
22 way or another in terms of disseminating or  
23 communicating any information?

24 A. After Megan's death.

25 Q. How is it that you were chosen to be



1 involved postmortem?

2 A. The question was whether or not Megan  
3 might have had a metabolic genetic disorder, and  
4 there is a series of people who had made various  
5 recommendations, and the thought was I could help  
6 expedite the postmortem studies so that those  
7 questions could be addressed appropriately.

8 Q. Do you have a recollection as to who  
9 those people were that thought you might be able  
10 to expedite some of the answers to those  
11 questions?

12 A. I believe it was the neonatologist who  
13 called me.

14 Q. Do you remember which neonatologist  
15 that was?

16 A. Michele Walsh-Sukys.

17 Q. Is Dr. Walsh-Sukys still at RB&C, to  
18 your knowledge?

19 A. Yes.

20 Q. Some time ago when we first attempted  
21 to schedule your deposition, there had been a  
22 request made that you bring with you a complete  
23 copy of your office chart or records regarding  
24 Megan that would include autopsy results and the  
25 results from any metabolic tests that had been

1 performed.

2 Have you brought any such documents  
3 with you today?

4 MS. MALNAR: The documents that he  
5 brought with him are copies of the documents that  
6 I faxed to you today.

7 MR. MISHKIND: I didn't get a fax from  
8 you today. When did you fax that?

9 MS. MALNAR: Did you get a fax from me  
10 today?

11 MR. NORCHI: It was around 11:30,  
12 12:00.

13 MR. MISHKIND: I was out of the  
14 office.

15 MS. MALNAR: I can make another copy  
16 of it now for you, if you like.

17 (Thereupon, a recess was taken.)

18 Q. The fax that came over from Ms. Malnar  
19 at 11:30, 12:00 o'clock, I had already left my  
20 office, so I have not seen that, but we are in  
21 the process of photocopying it and I will have  
22 questions for you relative to that.

23 But are these results of certain  
24 metabolic tests that had been performed on Megan?

25 A. They are the results of either

1 enzymatic or DNA based molecular tests, yes.

2 Q. Are these results of tests that were  
3 done in-house or that were sent out elsewhere?

4 A. The tests were done either at a  
5 laboratory that physically is located in Rainbow,  
6 a laboratory that's part of a Rainbow Center  
7 center that's at the V.A. Hospital in Cleveland,  
8 a laboratory that's -- I can't remember where it  
9 was back then, but it is part of the genetics  
10 department -- and a laboratory that's in  
11 California.

12 Q. Where are these records maintained,  
13 the originals of what you have brought with you  
14 today?

15 A. They are put in an envelope and put  
16 somewhere on my bookshelf.

17 Q. And what you brought with you today,  
18 does that constitute all of the test results that  
19 you have obtained back relative to Megan?

20 A. Those are the test results that I had  
21 some knowledge or some involvement with. There  
22 are laboratory tests that were done prior to  
23 Megan's death that I did not keep records of and  
24 don't have, didn't seek to.

25 Q. In a moment, doctor, I'm going to have

1     these documents marked as an exhibit for purposes  
2     of the transcript, but before I do that, let me  
3     ask you, there is reference, in addition to  
4     yourself, there is reference to Dr. Kerr and  
5     there is also reference to Stuart Schwartz that  
6     was somehow involved in the interpretation of  
7     some of this information; is that correct?

8             A.     I'm sorry, do that again, sir.

9             Q.     Dr. Kerr was involved in apparently  
10     the interpretation of some of the test results?

11            A.     Oh, I see. Yes, Dr. Kerr signed, I  
12     think, two of the reports. Dr. Schwartz signed,  
13     I think, two of the reports. I signed none of  
14     them since I didn't perform them. I didn't  
15     interpret any of the primary results.

16            Q.     Were there any tests that you had  
17     recommended that were never done in this case?

18            A.     Not to my knowledge.

19            Q.     So that all of the tests that you  
20     believe were reasonably appropriate to do to rule  
21     out or to confirm some type of a metabolic or  
22     genetic disorder were, in fact, done; is that a  
23     fair statement?

24            A.     The list that was provided to me from  
25     the assessment prior to Megan's death, I saw to

1 it that that list got executed appropriately.

2 Q. And as you look back at that list,  
3 would there have been any additional tests,  
4 metabolic or genetic tests, that in your  
5 professional opinion should have been performed  
6 in order to rule out any loose ends, if you will?

7 A. At the time I thought what was done  
8 was what should have been done.

9 Q. And as you sit here now, do *you* still  
10 hold that same opinion?

11 A. Actually I haven't thought about that.

12 Q. Is there anything that comes to mind  
13 as you are reflecting on it now that it would  
14 have been nice to have done to have ruled out or  
15 to confirm things?

16 A. I have to remember. You are asking me  
17 if there is something nice to have done. The  
18 answer to that is always yes. You always want  
19 more information, but the answer to the question  
20 you want, I think, is should more studies have  
21 been done, given the evidence at that time, and I  
22 think the answer is no.

23 Q. In a moment I'm going to hand these  
24 documents to Vivian. Let me ask you one  
25 question.

1                   Given the fact that I have not had a  
2     chance to read through these documents and  
3     without taking probably more time than any of us  
4     have today to study them, can you tell me whether  
5     these test results, which I have not seen before,  
6     whether or not they permit you to opine that  
7     there was any type of a metabolic or genetic  
8     disorder that caused Megan to experience her  
9     cardiopulmonary arrest?

10           A.     My assessment of reviewing these  
11    results when they became available was that I  
12    could not make a diagnosis based on these  
13    results.

14           Q.     Do you use, from a professional  
15    standpoint, the term that the results are  
16    inconclusive as a descriptive term?

17           A.     I sometimes use that term.

18           Q.     And might that have been a term that  
19    you used on one or more occasions when you talked  
20    with Mrs. Kaschak?

21           A.     Again, we had multiple conversations.  
22    I cannot remember all the conversations in  
23    detail. My feeling at the time was that rather  
24    than saying inconclusive, what I would say, they  
25    are not consistent within themselves and do not

1 allow me to make a specific diagnosis.

2 Q. And again, the diagnosis that you were  
3 looking to make was to determine whether or not  
4 there was some type of a metabolic or genetic  
5 abnormality, if you will, or error, inborn error  
6 that caused Megan on her first day of life to  
7 experience this cardiopulmonary arrest; correct?

8 A. Yes.

9 Q. And then, carrying that further,  
10 whether there was any metabolic or genetic  
11 disorder that prevented Megan from surviving the  
12 results of this cardiopulmonary arrest?

13 A. I probably wasn't trying to address  
14 that question.

15 Q. So you were focusing --

16 A. I was trying to see with the results  
17 of completing the studies of the people who  
18 evaluated her, and I considered on their list  
19 whether those things were explanations of what  
20 was going on and if any of the results, if they  
21 came back one way or another, would suggest  
22 further testing that I should do to either prove  
23 or disprove those initial hypotheses.

24 Q. The focus then -- and I don't mean to  
25 repeat --

1           A.       I'm trying to make sure I answer the  
2 question in a way that I am comfortable with.

3           Q.       Sure. And I am trying to understand  
4 it in a way that I am comfortable.

5           A.       I understand.

6           Q.       So I am not trying to be difficult.

7                    The evaluation was to determine  
8 whether or not there was some metabolic or  
9 genetic disorder that Megan had that is the more  
10 probable or likely explanation for why she  
11 experienced a cardiopulmonary arrest; true?

12          A.       Yes.

13          a.       And based upon all of the tests, there  
14 is insufficient evidence for you to provide an  
15 opinion that her cardiopulmonary arrest was  
16 caused by a metabolic or genetic error or genetic  
17 abnormality?

18          A.       That's correct.

19                   MR. MISHKIND: Let's go ahead and mark  
20 this as an exhibit. I'm not going to go through  
21 it; perhaps Mr. Norchi might, since he has the  
22 benefit of hours of reading it over better than I  
23 have. And what I may do is defer to Mr. Norchi  
24 and then read it while he is asking you questions  
25 and then maybe come back afterwards to try to



1     save some time.

2                   MR. MISHKIND:     Let's mark this as  
3     Plaintiff's Exhibit 1.

4                   - - -

5                   (Thereupon, Plaintiff's Deposition  
6                   Exhibit 1 was marked for  
7                   purposes of identification.)

8                   - - - -

9           Q.     Just for purposes of bookkeeping,  
10    Plaintiff's Exhibit 1 is a copy of the various  
11    interpretations and test results that you have  
12    provided today and that were within your  
13    possession from the Center for Human Genetics  
14    relative to Megan; is that correct?

15          A.     They were in my possession because  
16    they were mailed to me.

17          Q.     Are there other tests -- strike that.  
18                   Are these all postmortem tests?

19          A.     Yes.

20          Q.     As I understand it, the autopsy was  
21    done within 40 minutes of Megan's death?

22          A.     I don't know the details. I know it  
23    was done rapidly because of the requirements to  
24    try to preserve tissue.

25          Q.     What we have here are interpretations

1 and reports relative to what was done on a  
2 postmortem basis on these various tests; true?

3 A. Right. They were done not within that  
4 40 minute period. The tissue was collected,  
5 frozen, and then --

6 THE WITNESS: I'm sorry to be so  
7 graphic.

8 MR. MISHKIND: They realize.

9 THE WITNESS: I feel bad.

10 MR. MISHKIND: I appreciate that,  
11 doctor.

12 A. I will finish my answer. Yes, the  
13 tissues were collected and frozen, and as the  
14 tests proceeded, samples were analyzed.

15 Q. As you look at what we have here in  
16 Plaintiff's Exhibit 1, which now has an exhibit  
17 sticker and a staple preserving all the  
18 documents, are there other reports or  
19 interpretations that, for whatever reason, aren't  
20 contained in Exhibit 1 that relate to tests that  
21 were ordered postmortem?

22 A. Not to my knowledge.

23 Q. I want to ask you about certain  
24 communications that you may or may not have had  
25 with Michelle during this order.

1           A.     Mrs. Kaschak?

2           Q.     Yes.

3                   According to information that I have  
4     from Michelle, you spoke to her in August of '97  
5     indicating that you expected results from  
6     biochemical tests to be available in about a  
7     month or sometime in September of 1997.

8                   I don't expect that you can remember  
9     the exact date, but during the summer of 1997,  
10    were there some biochemical tests that you were  
11    waiting the results on?

12          A.     I believe so. I don't know the  
13    interval.

14                  What was the date of Megan's death?

15          Q.     February of 1997.

16          A.     That sounds correct.

17          Q.     And the biochemical tests, are they  
18    contained within the packet that is Exhibit 1?

19          A.     Yes.

20          Q.     Can you refer to what the document is  
21    that show the test results?

22          A.     Do you want specifically which test I  
23    was waiting for on that particular phone call?

24          Q.     At that particular time that would  
25    refer to biochemical tests that you were waiting

1 for in August of '97.

2 A. Then I would say the packet refers to,  
3 in some broad way, what I was waiting for.

4 Q. All of those are biochemical tests?

5 A. Maybe I should define the terms.

6 Q. All right.

7 A. Many of these reports are enzyme  
8 analyses, which is a form of biochemical  
9 measurement. Other tests are DNA based molecular  
10 testing, which some consider biochemical and  
11 others don't. But they are all metabolic studies  
12 designed to elaborate the cause of a metabolic  
13 disease. These are all metabolic tests.

14 Q. Do you recall ever indicating to  
15 Michelle the results on the phone as to the  
16 results of the biochemical tests, whether enzyme  
17 or otherwise?

18 A. Yes.

19 Q. And what is your recollection of what  
20 you told her?

21 A. I told her what I had received and  
22 what we had found.

23 Q. And the bottom line in terms of what  
24 you found and what you would have told her would  
25 be what?

1           A.     No doubt, it changed somewhat as we  
2     went through the conversations, but initially I  
3     said I don't have an answer, and I probably said  
4     I don't have an answer in each of our phone  
5     calls.

6                     I would also say that we have a  
7     result; I'm not sure what it means, or it shows  
8     this, but we need to wait for something else to  
9     see if that's been confirmed by the other  
10    studies.

11                    I would say that was the content of  
12    most of the conversations.

13           Q.     Do you recall ever having a  
14    conversation with Michelle where you gave her the  
15    final report on all of the tests, after having  
16    all of the information back over the many months  
17    that this process took place?

18           A.     To the extent that I was uncomfortable  
19    doing everything on the phone, I would say I gave  
20    a final report. And I said that we don't have an  
21    answer for what happened to your baby.

22           Q.     Do you recall indicating to  
23    Mrs. Kaschak at one time or another that the  
24    neurological changes that occurred to Megan  
25    appeared to be most likely secondary to the

1 hypoxic episode that she experienced on her first  
2 day of life?

3 A. I don't think I would have commented  
4 on that.

5 Q. Tell me why is that.

6 A. One, I wasn't a witness to those  
7 events, and two, that's a neuropathology  
8 interpretation, and I don't think I could say  
9 more or less likely to that.

10 Q. Have you had a chance to review the  
11 autopsy?

12 A. Yes.

13 Q. Do you have a copy of the autopsy with  
14 you today?

15 A. No.

16 Q. To the extent that you need it in  
17 responding then to any of my questions, I'm going  
18 to go ahead and mark a copy of the autopsy as  
19 Plaintiff's Exhibit 2, and feel free to reference  
20 it as necessary.

21 - - -

22 (Thereupon, Plaintiff's Deposition  
23 Exhibit 2 was marked for  
24 purposes of identification.)

25 - - - -

1 MS. MALNAR: May I?

2 MR. MISHKIND: Sure.

3 A. Can you repeat your last question, the  
4 one about the hypoxic changes?

5 Q. Sure.

6 What I asked you was whether you  
7 recalled indicating to Mrs. Kaschak that the  
8 neurological changes that occurred to Megan  
9 appeared to be most likely secondary to the  
10 hypoxic episode that she experienced on her first  
11 day of life.

12 A. Okay. Let me amplify my answer. Is  
13 that permissible?

14 Q. Go right ahead.

15 A. I hope what I said -- I don't think I  
16 would've said more likely, because I don't think  
17 that would be my position to do that, and I think  
18 it would have been presumptuous.

19 I think at one time I might have said  
20 could be consistent with, but I don't think I  
21 would have said more likely.

22 Q. Were you able to provide her with any  
23 explanation that was equally likely as being the  
24 cause of the neurological changes, other than the  
25 hypoxic episode she experienced?

1           A.       To answer that, then, I think I would  
2     have focused on the metabolic potential cause,  
3     and at no time did I have an explanation  
4     sufficient to provide her with that explanation.

5           Q.       So that you considered the hypoxic  
6     episode as being one of a number of potential  
7     explanations for the neurological changes and you  
8     also considered metabolic abnormalities as a  
9     potential explanation for the neurological  
10    changes?

11                   MR. NORCHI:  Objection.

12           A.       The neuropathologic?

13           Q.       Yes.

14           A.       I would leave that to the  
15    neuropathologist.

16                   See, the answer -- I'm not sure what  
17    your objection is.

18           Q.       Don't worry about the objection.

19           A.       Sorry.

20           Q.       Sometimes lawyers object because they  
21    know why they are and sometimes they object  
22    because they feel they have to.

23                   MR. NORCHI:  I know why I am  
24    objecting, Howard.

25                   THE WITNESS:  I'm sorry, I am trying



1 to answer people's questions.

2 MR. NORCHI: Go ahead, doctor.

3 A. The question I would have, if I was  
4 trying to discuss that with Mrs. Kaschak, would  
5 be, do I know the cause or the effect. I mean,  
6 if there was a metabolic disorder that caused the  
7 child to have a cardiorespiratory arrest, then  
8 you can have problems with the arrest itself.

9 It's a question of what caused the  
10 arrest. And so that's why I couldn't tell cause  
11 and effect and why I wouldn't comment further.

12 Q. As you sit here now, do you have a  
13 basis to say to a reasonable degree of medical  
14 probability that you know what the cause of the  
15 cardiopulmonary arrest was?

16 A. I do not know the cause of that.

17 Q. Do you have a basis to a reasonable  
18 degree of medical probability to say that you  
19 know what the cause of the hypoxic ischemic  
20 encephalopathy was that the baby suffered?

21 A. I don't have a comment on that. I  
22 don't have a position on that.

23 Q. Is there a reason that you don't have  
24 a position on that?

25 A. Because I think the neuropathologists

1 have to comment on -- I mean, it's a  
2 neuropathology diagnosis of what they see and I  
3 didn't focus on that.

4 Q. In looking at the autopsy for a  
5 moment, if you could turn to page four. In the  
6 summary and comments section --

7 A. Yes.

8 Q. -- the second paragraph, just so that  
9 we are referencing it, it says abnormal  
10 significant autopsy results fell into two major  
11 categories.

12 A. Yes.

13 Q. One being severe hypotensive/ischemic  
14 encephalopathy, which is attributable to cardiac  
15 arrest on the first day of life, and two,  
16 excessive glycogen deposition in liver, skeletal  
17 muscle and cardiac muscle.

18 Did I read that correctly?

19 A. Correct.

20 Q. Do you have an opinion as to the  
21 significance of the excessive glycogen  
22 depositions that were found in the liver, the  
23 skeletal muscle and the cardiac muscle?

24 A. I don't have an explanation for it.

25 Q. Are there factors that you considered

1 as possible explanations for that?

2 A. I thought it was either related to the  
3 events experienced prior to Megan's death or it  
4 could have been secondary to a metabolic  
5 disorder.

6 Q. Were you ever able to attribute the  
7 glycogen deposition in the liver, skeletal muscle  
8 and cardiac muscle to a metabolic disorder?

9 A. No.

10 Q. You said the other possibility was to  
11 events that occurred prior to her death. What do  
12 you mean by that?

13 A. That as you experience the severe  
14 problems that Megan had, you can have tissue  
15 damage that effects mitochondrial function. You  
16 may not be able to use glucose, break down  
17 glycogen and use the glucose; especially when you  
18 place the child on large amounts of intravenous  
19 sugar, that sugar has no place to go and the  
20 cells tend to store it.

21 Q. Who prepared the autopsy report  
22 itself?

23 A. I presume the pediatric pathologist.  
24 I believe Dr. Beverly Dahms signed it and I don't  
25 know if a resident helped her or not. I don't

1 remember the names on it. Maybe it says.

2 Q. I believe Beverly Dahms is at least  
3 the major person involved.

4 A. She is the staff pathologist.

5 Q. Did you have any ongoing discussion or  
6 conversation with Dr. Dahms as the tests were  
7 being ordered and the results were coming back  
8 postmortem?

9 A. We spoke on a number of occasions.

10 a. Tell me to the best of your  
11 recollection, either specifically or in general,  
12 what was discussed and what information you  
13 likely imparted to her or she to you.

14 A. The initial conversation had to do  
15 with what she would like me to do to help her,  
16 and what I told her I would need from her.

17 So I asked her basically to do as best  
18 a job as she could and provide me with as much  
19 information as she could and then to let me know.  
20 And she had the results, and on the second visit,  
21 third, or whatever it was, I went over and  
22 discussed those results.

23 We spoke about the glycogen deposition  
24 at some length. We tried to see if that was a  
25 good clue or that might help me establish a

1 course for further study. We looked at all the  
2 related causes of glycogen deposition in inborns  
3 and we could not match those with the pattern we  
4 could see.

5 I could not do that alone. Dr. Dahms  
6 had to look at the cells. She had to tell me  
7 where they were in the cell, if they had  
8 membranes around it.

9 I don't mean to go through the  
10 particulars, but that's what she could tell me.  
11 And based on that, I thought it was likely that  
12 the glycogen was secondary, if anything, to a  
13 mitochondria, as people call it, or oxidative  
14 phosphorylation defect.

15 The decision was made to focus on that  
16 as previously suggested prior to Megan's death by  
17 her attending physicians and some of the  
18 consultations.

19 Q. Did you ultimately rule out or confirm  
20 the existence of that condition?

21 A. We could not establish that she had an  
22 electron chain transport defect.

23 &. So that from a probable --

24 A. I should probably still  
25 finish answering your previous question.

1 Q. Go ahead.

2 A. Then I also got back to Dr. Dahms and  
3 told her what we had found and hadn't found and I  
4 informed her that we couldn't come up with a  
5 consistent metabolic pattern that would allow me  
6 to give her a final diagnosis.

7 I'm not sure how many conversations  
8 that was, but I would say that would be the three  
9 stages of our conversations.

10 Q. Did there ever come a time that you  
11 attempted to set up a meeting to talk with the  
12 Kaschaks about the final results?

13 A. We spoke a number of times about that.

14 Q. Did you ever have an in-person  
15 meeting?

16 A. **No**, we didn't.

17 Q. Do you know why that is?

18 A. I just know it wasn't possible to set  
19 it up with Mrs. Kaschak on the phone. I mean, my  
20 impression was it was just too difficult for her.

21 Q. Fair enough.

22 A. But I don't know that for sure.

23 Q. Again, referring to the autopsy,  
24 doctor, to my knowledge in reading the deposition  
25 (SIC), the placenta was normal on review.

1                   Was that the information that you had,  
2   as well?

3                   MS. MALNAR:  You are reading the  
4   autopsy?

5                   MR. MISHKIND:  Yes.

6                   MS. MALNAR:  You said deposition.

7           A.       I'm sorry, where am I looking?

8           Q.       On page four under the summary and  
9   comments, the third paragraph, about five lines  
10  down.

11          A.       The placenta was normal on subsequent  
12  review, and what is your question?

13          Q.       **If** the placenta was abnormal, would  
14  that cause you to have --

15          A.       The placenta was normal, however.

16          Q.       If it had been abnormal, would that  
17  have caused you to consider other factors being  
18  contributory to the baby's cardiopulmonary  
19  arrest?

20          A.       One, I would have spoken with the  
21  pathologist and asked him what the abnormality  
22  was and what they thought it could be.  That  
23  would generally be something they would tell me  
24  as opposed to the opposite.

25          Q.       Now, there is a note --

1           A.       I'm slower than you.

2           Q.       Okay, that's all right. I don't mean  
3 to cut you off.

4           A.       The fact is, if the pathologist would  
5 have reviewed the placenta and said they found  
6 something unusual or something suggestive, we  
7 often would get involved in that, because part of  
8 medical genetics, it deals with things like  
9 that. So I might have done something else I  
10 think is what you are really asking me.

11          Q.       Correct.

12          A.       But that was not said to me.

13          Q.       I am looking to see whether you can  
14 help me with certain terms in the autopsy. I  
15 recognize you did not prepare it, but certainly  
16 you are familiar with the terminology as it  
17 relates to this baby, and hopefully you can help  
18 me.

19                    The bottom of that page where it says  
20 certainly this prolonged cardiorespiratory arrest  
21 could explain the severe hypotensive/ischemic  
22 encephalopathy observed at autopsy --

23          A.       Yes.

24          Q.       -- can you explain what that means?

25          A.       The brain is absolutely dependent upon



1 oxygen to function. In the absence of oxygen,  
2 the brain cannot function and undergoes  
3 destructive changes.

4 If you do not have adequate blood flow  
5 when you are hypotensive and your blood pressure  
6 is low, you get ischemia, which is the  
7 insufficiency of oxygen, and you subsequently  
8 experience damage to the brain, which is called  
9 encephalopathy.

10 Q. In this particular case, do you know  
11 how prolonged the cardiorespiratory arrest was  
12 before there was adequate resuscitative efforts  
13 given to the baby?

14 A. I may have known that at some point,  
15 but I don't know it now. And the most accurate  
16 answer to your question is my assumption was that  
17 it was rather long and it was a terrible event,  
18 so that's where I left it when people gave me  
19 that information.

20 Q. Again, from a general ethics  
21 standpoint, when one looks at a  
22 hypotensive/ischemic encephalopathy, is the  
23 length of time where the resuscitative efforts  
24 are not adequate after a cardiopulmonary arrest,  
25 the longer the length of inadequate resuscitative

1 effort, does that increase the potential for more  
2 damage to the brain?

3 A. I am probably not the one to ask, but  
4 in my opinion --

5 MR. NORCHI: Objection.

6 Q. Go right ahead, doctor.

7 MR. NORCHI: Go ahead.

8 A. From a biochemist's point of view, the  
9 longer the brain is without oxygen, the more at  
10 risk it is for damage.

11 The part I am having trouble  
12 answering, just to be clear, you made the  
13 statement of inadequate efforts to resuscitate  
14 and I didn't make any effort to assess whether  
15 efforts were adequate or not. I just knew the  
16 duration, okay?

17 Q. There was some suggestion in another  
18 deposition about some suggestion of a dysmorphic  
19 finding in the University Hospital records. Did  
20 you see any suggestion that there was any  
21 dysmorphic characteristics or dysmorphic  
22 findings?

23 A. I haven't reviewed that for a long  
24 time, and my recollection is that it was not the  
25 feeling that this child had significant

1     dysmorphism.

2           Q.     And to the extent that there is some  
3     reference --

4           A.     Actually, I am slower than you.

5           Q.     I'm going to slow down.

6           A.     As a rule, what the pathologist does  
7     on the first page, they would summarize that, and  
8     if there was a suggestion prior to death that  
9     there was significant dysmorphism, that would  
10    generally be included in the clinical diagnosis  
11    or summary statement. I don't see that. I'll  
12    look carefully, but I don't see a statement to  
13    that effect.

14          Q.     If there was significant dysmorphic  
15    features, would that cause you as a medical  
16    geneticist to look to other metabolic or genetic  
17    disorders as an explanation?

18          A.     Depending on the nature of the  
19    dysmorphism, yes.

20          Q.     But absent any such evidence in this  
21    case, there is no reason to have looked to that  
22    level; correct?

23          A.     I can't remember what was done,  
24    whether the chromosome analysis was done, for  
25    example, or something else. My feeling is that

1 the neonatal intensive care unit with their  
2 consultants would have looked for such things.

3 I would not have done any more than  
4 that unless the pathologist had told me after  
5 summarizing everything that there was still a  
6 question about that. Is that an answer?

7 Q. Not only is it an answer, but it's  
8 responsive too.

9 I want to jump back for a second,  
10 because I am looking at my notes. You said that  
11 you are a clinical geneticist?

12 A. I am. That's my board.

13 Q. There are medical geneticists that are  
14 not clinically based?

15 A. I am trying to think. The American  
16 Board of Medical Genetics first started  
17 certifying people the year I graduated from my  
18 fellowship, so I took my boards in 1981 and  
19 that's when I took clinical genetics. I thought  
20 I was done.

21 There are actually five subboards on  
22 that board. My recent boss wanted me to take  
23 another subboard, so I sat in '96 for the  
24 subboard of clinical biochemical genetics.

25 So that the direct answer to your

1 question, there are people who are certified by  
2 the American Board of Medical Genetics who are  
3 not physicians, in fact, and are boarded in other  
4 activities.

5 Q. Going back to the autopsy now -- thank  
6 you for clarifying that.

7 In the autopsy, there is a reference,  
8 page five, about halfway down in the first  
9 paragraph of the page, there was no evidence of  
10 structural congenital anomalies in the central  
11 nervous system to explain the infant's course.

12 A. Yes.

13 Q. Do you see that?

14 A. Yes.

15 Q. What type of structural congenital  
16 anomalies in the central nervous system would  
17 typically be looked at to explain the course that  
18 Megan experienced?

19 A. I can answer this only from a  
20 geneticist's perspective, not a pathologist's.  
21 From a geneticist's perspective, if a child stops  
22 breathing, you want to look at the portion of the  
23 brain that controls breathing, and so they would  
24 look in the mid brain, for example.

25 Similarly, they would look for

1 evidence of increased pressure, hydrocephalus,  
2 things like that.

3 Q. These would be things --

4 A. They would look for a whole range of  
5 things.

6 Q. They would be looking for things that  
7 essentially would be incompatible with life?

8 A. Not everything they would find would  
9 be incompatible with life.

10 Q. Were there any findings, either from a  
11 genetic standpoint, or from a neuropathology  
12 standpoint, as you understand them, to suggest  
13 that Megan had some characteristic that made her  
14 incompatible with life?

15 MS. MALNAR: Objection. Go ahead.

16 A. From this sentence alone, it would  
17 seem that Dr. Dahms didn't see any such thing. I  
18 don't know where the neuropathology report is.  
19 That's different. It's done by a different  
20 pathologist, and they see things that Dr. Dahms  
21 would not see. They usually have an addition. I  
22 don't know where that is.

23 Q. There is a neuropathology diagnosis on  
24 page two.

25 A. Okay.

1           Q.     Are there any findings that would  
2     suggest or be consistent with some state that  
3     would cause Megan to be incompatible with life?

4           A.     I think here I have to defer.

5           Q.     Fair enough. What is it that causes  
6     you the inability?

7           A.     I'm not smart enough. I'm not trying  
8     to be cute. I just don't know enough about this.

9           Q.     The electron transport chain enzymes  
10    that were done at University Hospitals by the  
11    CIDEM unit --

12          A.     Would you like to know what that  
13    stands for?

14          Q.     I will in a moment.

15                 MS. MALNAR: I would like to know  
16    where you are.

17                 MR. MISHKIND: Page five, second last  
18    paragraph.

19                 MS. MALNAR: Thank you.

20          Q.     Are the results of this CIDEM unit,  
21    are they part of the documents that we have in  
22    Exhibit 1?

23          A.     Yes.

24          Q.     And were they normal?

25          A.     No.

1           Q.     Of what significance was the  
2     abnormality?

3           A.     I can't explain the significance.  
4     They formed a pattern that I could not interpret.

5           Q.     Of what significance would this  
6     pattern have had, if any, on Megan, had she not  
7     experienced the cardiorespiratory arrest on day  
8     one of her life?

9                   MR. NORCHI:  Objection.  Go ahead,  
10    doctor.

11          A.     I can't answer the question as  
12    phrased.  My difficulty is if I can't interpret  
13    the significance of the results, I can't tell you  
14    either biochemically -- I can't turn around and  
15    tell you the clinical significance to judge the  
16    past or what might have happened in the future.

17          Q.     So in other words, even though there  
18    is something abnormal in the CIDEM unit, the  
19    electron transport chain enzyme test, in terms of  
20    how that might have or would have manifested  
21    itself in terms of disability, if any, to Megan,  
22    you can't provide any type of an opinion on that;  
23    is that correct?

24          A.     Yes.

25          Q.     And let me ask you this, just to try



1 to save some time.

2 I understand that you have indicated  
3 to me thus far that all of the tests that were  
4 done, the metabolic and genetic tests that were  
5 done, did not permit you to conclude more likely  
6 than not that any of the conditions that you were  
7 looking for were likely the cause of her  
8 cardiopulmonary arrest; correct?

9 A. I'm sorry, I wouldn't phrase it that  
10 way. I couldn't find a diagnosis, that's what I  
11 was doing. I was looking for a diagnosis.

12 Q. From a metabolic and genetic  
13 standpoint?

14 A. I couldn't find a diagnosis.

15 Q. So in other words, in lay terms, there  
16 is nothing in the metabolic or genetic tests that  
17 explained why she experienced a cardiopulmonary  
18 arrest on the first day of her life?

19 MR. NORCHI: I'm going to object to  
20 what explained means. It doesn't take into  
21 content the probability, which is what you were  
22 looking at before, and possibilities, but go  
23 ahead and answer the question.

24 A. If I'm not sure what the answer was, I  
25 couldn't then turn around when I was speaking to

1 Mrs. Kaschak and say I know what happened. I  
2 just couldn't do that. And that's my answer to  
3 your question.

4 Q. And basically, what you wanted to be  
5 able to say to Mrs. Kaschak is that I found a  
6 metabolic or a genetic condition -- strike that.

7 There are several things that you  
8 wanted to arrive at. One was being able to say  
9 to her, I found a metabolic or genetic  
10 abnormality that explains more likely than not  
11 why she experienced a cardiopulmonary arrest;  
12 correct?

13 A. I probably would have phrased it why  
14 she died, but the answer is yes.

15 Q. And you weren't able to, after the  
16 exhaustive testing that was done, you were not  
17 able to arrive at a test result that from a  
18 causal relationship standpoint explained why she  
19 experienced the cardiopulmonary arrest?

20 MS. MALNAR: Objection.

21 A. Correct.

22 a. Now, had Megan not experienced the  
23 cardiopulmonary arrest on day one of her life, is  
24 there anything from any of the test results that  
25 you have that I haven't studied or that I have

1 studied that would portend a poor prognosis or  
2 some adverse consequences in terms of Megan's  
3 development as she went through her infancy and  
4 her childhood and the rest of her life?

5 MR. NORCHI: Objection. We have  
6 already been over this, but go ahead.

7 A. I didn't find a consistent pattern  
8 that would have allowed me to make any  
9 predictions.

10 Q. So is there anything in any of the  
11 test results that would cause you to say that she  
12 more likely than not would have had neurological  
13 or motor deficits or cognitive deficits as a  
14 consequence of any of these test results?

15 A. As the tests stand, the answer is no.

16 Q. Fair enough.

17 I'm curious more than anything else,  
18 so I will ask it. There is a saying about  
19 curiosity.

20 My office had requested back into 1998  
21 that the results of these tests performed  
22 relative to the autopsy on Megan Kaschak be  
23 provided. I have a letter to you back in  
24 February of '98 and June of '98, and those  
25 results never were provided to my office, and

1 certainly they were not provided to the Kaschaks  
2 either.

3 Is there a reason why that information  
4 wasn't provided? And I am not criticizing, I am  
5 just trying to understand why.

6 A. One, in my mind, I had never seen  
7 Megan and I had never seen her parents, so that  
8 my view is she wasn't my patient and I actually  
9 had no records that were unique to me.

10 And my thought was all the records  
11 that were available were either available through  
12 Dr. Walsh-Suyks, who would be involved in this  
13 and could send you the whole package, or the  
14 pathology department, which is actually  
15 responsible, and not me, for postmortem studies.

16 I have actually gotten in trouble with  
17 the pathology department because I tended to do  
18 things in the past independent of them, and they  
19 pointed out that the law requires that they  
20 deliver all that themselves, so I thought you had  
21 it.

22 I'm actually surprised you didn't.  
23 None of this stuff was sent to me uniquely. I  
24 was always given copies of things and I just  
25 thought, I actually thought you had it because I

1 had nothing unique.

2 Q. I am going to show you a letter that I  
3 have marked as Plaintiff's Exhibit 3. I will  
4 show it to your counsel first and then I just  
5 have one question for you on this point.

6 - - -

7 (Thereupon, Plaintiff's Deposition  
8 Exhibit 3 was marked for  
9 purposes of identification.)

10 - - - -

11 Q. First, is Plaintiff's Exhibit 3 a copy  
12 of a letter sent by my office to you back in June  
13 of '98?

14 A. Okay.

15 Q. Do you recall receiving that letter?

16 A. No.

17 Q. You don't. Are you saying that you  
18 didn't or you just don't remember one way or  
19 another?

20 A. I am saying I don't recall.

21 Q. And the only reason I am taking the  
22 time on that is that this letter was pointing out  
23 to you that we had tried to get the records and  
24 were told and were directed back basically to  
25 you. We requested the records from the hospital

1 and they indicated that there were no such  
2 results.

3 Do you ever recall having  
4 conversations with my office where we were saying  
5 that we couldn't get these records from anywhere  
6 else and we needed your assistance in terms of  
7 providing them to us?

8 A. I don't recall the conversation  
9 specifically. I truly thought all these records  
10 would be sent by pathology and sometimes, I mean,  
11 I will tell you probably on my end, it takes  
12 forever to get things, and I just figured it was  
13 taking forever. But I was told to have all  
14 records go through the hospital and that's what I  
15 tried to do.

16 Q. Who was it that advised you of that?

17 A. I mean, it's no one in particular.  
18 The medical records department has asked people,  
19 various administrators have asked people, I am  
20 sure the lawyers have asked people to ask us to  
21 do this.

22 Q. When is the last time you had an  
23 occasion to talk to Dr. Walsh-Sukys about this  
24 particular baby?

25 A. I can't tell you in detail when that

1     might be. But I have not talked about the  
2     details of the testing for some time.

3           Q.     To your knowledge, has Dr. Walsh-Sukys  
4     arrived at or expressed to you any opinions as to  
5     the cause of the cardiopulmonary arrest that she  
6     had shared with you?

7                   MS. MALNAR: Objection. Go ahead.

8           A.     I don't think so. The longer answer  
9     is that since I was uninvolved in Megan's care, I  
10    think one of the reasons I was asked to do this  
11    is I had no prior knowledge of events, and so I  
12    didn't want to hear about anything else.

13                   I just wanted to do what they had  
14    asked me to do. I wanted to do the lab tests  
15    without prejudice from anything else that had  
16    gone on clinically. So if someone had a  
17    conversation, I would've said, okay, go back and  
18    do what I have to do and that's what I would have  
19    done.

20           Q.     You clearly did not want to know what  
21    the precipitant was or how responsive the  
22    resuscitative efforts were or were not following  
23    the cardiopulmonary arrest?

24           A.     I mean, the story I heard was that --

25                   MR. NORCHI: Objection. Go ahead.

1 Q. Go ahead.

2 A. -- was that Megan had had a bad time  
3 of it and it was a long time.

4 Q. And who shared that with you?

5 A. Michelle probably did and I think  
6 Dr. Dahms when she went over the clinical story.

7 Q. Anyone else that you recall besides  
8 Dr. Dahms and Michelle that shared with you that  
9 history?

10 A. Not directly with me.

11 Q. How about indirectly?

12 A. I mean, I am trying to think if in the  
13 course of things people said something, but no  
14 one had a conversation with me about it.

15 Q. Is there something in general that you  
16 are referring to?

17 A. No, no. There are a lot of people in  
18 the hospital. People talk. I am just trying to  
19 say no one spoke to me specifically about Megan's  
20 case that I stayed long enough to hear the end of  
21 it.

22 Q. I take it from that -- and if I am  
23 wrong, set me straight -- that you overheard  
24 excerpts of some conversations?

25 A. No, I am saying I may have. I just



1 know this was a case that there was some  
2 discussion about and people would have talked, .  
3 And I know, I might have been around the unit or  
4 talking to Michelle and someone else said  
5 something. I just don't remember details. But  
6 my information, which I think -- I am not sure  
7 what your question pertinence is -- but to me the  
8 information was given when Dr. Walsh-Suyks asked  
9 me to get involved or talking to Dr. Dahms to try  
10 to help out there.

11 Q. Did you ever talk with Dr. Bruce Cohn  
12 from The Cleveland Clinic?

13 A. No.

14 Q. Did you know that he was brought over  
15 to do a neurological evaluation?

16 A. I specifically knew that, yes. I have  
17 spoken with Dr. Cohn on numerous occasions, but I  
18 don't think I have ever spoken about any of  
19 details of Megan's care.

20 Q. When you say you have spoken to him on  
21 numerous occasions, did it have anything to do  
22 with any aspect of this case?

23 A. What I am saying is, Dr. Cohn used to  
24 come to meetings where I was at and he might --  
25 we might have said we saw this or that patient in

1 the course of things, but I did not go over the  
2 details of this with Dr. Cohn.

3 Q. One of the potential causes of a  
4 cardiopulmonary arrest was obviously potential  
5 inborn errors of metabolism; correct?

6 A. Start again.

7 Q. One of the potential causes of  
8 cardiopulmonary arrest was the possibility of  
9 inborn error of metabolism; correct?

10 A. Correct.

11 Q. And such things as galactosemia and  
12 phenylalanine as the other classic inborn errors  
13 of metabolism were looked at and ruled out;  
14 correct?

15 MR. NORCHI: Objection. If you know.

16 MS. MALNAR: If you know, you can  
17 answer.

18 A. My assumption was that the state  
19 screening looked at those. On the other hand, I  
20 would not have thought to look again or more  
21 carefully at those possibilities, because they do  
22 not produce the kind of problems that Megan had.

23 Q. Okay, fair enough.

24 I'm going to quote as best as I can  
25 what I'm told as it relates to a conversation

1     that you had in October of '98, probably one of  
2     the last conversations that you might have had  
3     with Mrs. Kaschak. And I'll give it to you  
4     entirely and then I'm going to ask you whether or  
5     not you remember that conversation or something  
6     similar to that taking place. And if not, tell  
7     me why. Okay?

8             A.     Okay.

9             Q.     You understand the context under which  
10     I'm about to --

11            A.     I'm not sure.

12            Q.     In October of '98, I am advised by  
13     Mrs. Kaschak that you had a conversation with her  
14     and told her that all of the genetic tests done  
15     on Megan were normal, except for an inconclusive  
16     borderline electron transport chain assay test  
17     which Mrs. Kaschak told me you told her could be  
18     many things or nothing at all.

19                   Does that sound consistent with what  
20     you likely discussed with her?

21            A.     I discussed that kind of thing with  
22     Mrs. Kaschak. I'm not sure I would've said it  
23     that way, though, but I discussed those kinds of  
24     things with Mrs. Kaschak.

25            Q.     When one says that the borderline

1 electron transport chain assay test -- which  
2 could be many things or nothing at all -- in  
3 simple terms that a lawyer or a jury can  
4 understand, what does that mean?

5 A. Again, I'm not sure that that's what I  
6 said. Second, what the results show is an  
7 inconclusive pattern of abnormalities.

8 Q. Can you be any more specific as to  
9 what the pattern of abnormalities are?

10 A. I can be as specific as you want if  
11 you want to go over the labs, but if you don't  
12 want me to do that, I can tell you that the  
13 results from different tissues did not agree  
14 within themselves, so that an abnormality that  
15 was found in one tissue was not normal, and was  
16 normal, for example, in another, and in one case  
17 was actually increased; in other words, certainly  
18 not deficient.

19 Q. Have you ever seen that kind of a  
20 pattern before?

21 A. Yes.

22 Q. And what does it mean to you as a  
23 geneticist where you have these inconclusive or  
24 inconsistent findings?

25 A. It means I can't interpret the results

1 in a consistent and helpful way. And I think  
2 that was the gist of my conversation with Mrs.  
3 Kaschak.

4 Q. Were there any additional tests after  
5 the electron transport chain assay test in  
6 October of '98 that you indicated to Mrs. Kaschak  
7 were being done that you were going to report  
8 back to her or that she would learn about?

9 A. I don't remember the date of our last  
10 conversation, but in our last conversation, I  
11 think I said that there was no more testing I had  
12 planned.

13 Q. And the CIDEM unit stands for what?

14 A. The Center for Inherited Disorders of  
15 Energy Metabolism.

16 Q. That's at UH?

17 A. You know, I actually don't know where  
18 under house auspices. It's physically located in  
19 Rainbow and at the V.A.

20 Q. Beside the V.A. and Rainbow, were  
21 there tests that were sent out of state?

22 A. Yes. As I said before, there was one  
23 test that was sent to Los Angeles and some tests  
24 sent to another building for the genetic tests.

25 Q. The ones to Los Angeles, was that sent

1 to Dr. Ng's office?

2 A. Dr. Ng?

3 Q. Yes.

4 A. I don't see the name on it. I think  
5 Dr. Ng is the one that actually did them. They  
6 were signed by somebody else. She subsequently  
7 left Los Angeles, so I can't remember.

8 (Thereupon, a discussion was had off  
9 the record.)

10 Q. What is an oxidative metabolic energy  
11 metabolism defect?

12 A. It's a defect where you're burning up  
13 some food product with oxygen to get energy from  
14 it.

15 Q. Was there any evidence that Megan had  
16 that condition?

17 A. No conclusive evidence.

18 Q. The glycogen deposition found on  
19 autopsy raised an issue of glycogen storage  
20 disease; correct?

21 A. It raised that possibility.

22 Q. But that ultimately was not  
23 established?

24 A. I thought it was more likely since we  
25 couldn't fit it into a recognized pattern of one

1 of the glycogen diseases to think that it was  
2 related to an oxidative metabolic disorder for  
3 which there was precedent.

4 Q. And what causes such a condition?

5 A. I think we discussed that before, but  
6 basically if the cell can't mobilize energy, it  
7 can't use glycogen effectively.

8 Q. But what can cause the inability of  
9 the cell to mobilize or to metabolize?

10 A. If there is a defect in mitochondrial  
11 function where the mitochondria is the carburetor  
12 of the cells. It takes different cells and fuels  
13 and burns them.

14 If the mitochondria cannot do that,  
15 various fuels will accumulate because it has no  
16 place to go, so you can get deposits of glycogen.

17 Q. Are there any test results that  
18 establish a mitochondrial defect?

19 A. No.

20 Q. Can you state to a probability then  
21 that there was some type of a glycogen storage  
22 disease?

23 A. I found no evidence in the biochemist  
24 school studies directly confirming that --

25 Q. **So** this is just --

1 A. -- or disproving that.

2 Q. -- just a possibility, but not a  
3 probability?

4 A. Correct.

5 Q. There is some reference in the autopsy  
6 to Megan's death falling into the category of a  
7 near missed SIDS.

8 Are you qualified to provide any  
9 opinions on whether or not her age and the  
10 circumstances surrounding her cardiopulmonary  
11 arrest and her death fit the stigmata or the  
12 description of a near SIDS death?

13 A. I'm not an expert on SIDS. But I can  
14 answer the question to the extent that SIDS-like  
15 episodes mean that they don't necessarily fit  
16 into the standard criteria and a subset of those  
17 can have an underlying metabolic cause.

18 Q. But again, we don't have anything that  
19 you could point to that establishes an underlying  
20 metabolic cause in this case?

21 A. Correct.

22 Q. There were muscle biopsies done;  
23 correct?

24 A. Postmortem?

25 Q. Yes.



1           A.     I wouldn't call it a biopsy then. I  
2 would say muscle samples were obtained  
3 postmortem.

4           Q.     Were there any findings that were  
5 significant in terms of leading to any definitive  
6 conclusions?

7           A.     The pathology report would answer  
8 that. I don't remember any mention that they  
9 found such.

10          Q.     The tests that you were performing  
11 wouldn't have any implication on any --

12          A.     No, if you were asking me morphologic  
13 changes that the pathologist pursues. I am  
14 answering the question, some of the reports that  
15 I provided that you now have in your possession  
16 are done on skeletal muscle and that's included  
17 in the comments we have made before.

18          Q.     Any abnormalities on the skeletal  
19 muscles that you describe?

20          A.     Yes. The skeletal muscle does have  
21 abnormalities in some of the electron transport  
22 chain.

23          Q.     And of what significance are those  
24 abnormalities?

25          A.     I cannot tell you the significance

1     because they are not consistent within different  
2     tissues, so by sharing the results in the  
3     skeletal muscle with the heart muscle with the  
4     liver, it's the whole picture that I can't put  
5     together.

6           Q.     Did you take into account in trying to  
7     put these findings together and arrive at some  
8     explanation for her death the fact that she had  
9     good apgars at the time of birth? In other  
10    words, the clinical picture during the first 24  
11    hours, did you take any of that into account?

12          A.     I took it into account, yes.

13          Q.     And in what respect did that help or  
14    hinder your conclusions?

15          A.     It didn't help.

16          Q.     Why is that?

17          A.     Because it's not helpful. You often  
18    have children who have perfectly fine apgar  
19    scores, who, until they have a requirement for  
20    energy production, do not get into trouble.

21          Q.     And those children that have perfect  
22    apgar scores that then have metabolic studies or  
23    genetic studies done, more often than not, you  
24    are able to arrive at some explanation from a  
25    metabolic or genetic standpoint?

1           A.     More often, I am not able to arrive at  
2     an answer.

3           Q.     So then you ultimately wind up saying,  
4     I have no explanation?

5           A.     Yes. You haven't asked me, but -- I  
6     know I'm not supposed to do this -- but the apgar  
7     scores, you can have normal apgar scores,  
8     abnormal apgar scores. They are not a singular  
9     useful thing and often I find that I cannot  
10    provide an explanation independent of the initial  
11    apgar scores.

12          Q.     This is a search for the truth, so if  
13    you happen to blurt out something --

14          A.     I am not blurting, I am trying to  
15    help.

16          Q.     I appreciate that.

17                 The existence of severe  
18    hypotensive/ischemic encephalopathy that's found  
19    on autopsy, is that in any way explained by any  
20    of the results from a metabolic or genetic  
21    standpoint?

22          A.     No.

23          Q.     Are you aware of any studies,  
24    articles, that are contained within the medical  
25    literature that are similar in any way to Megan's

1 case where there were concerns about genetic or  
2 metabolic abnormalities being the explanation for  
3 a cardiopulmonary arrest, where all of the tests  
4 were done and basically they were inconclusive  
5 from a genetic standpoint, a series of tests or  
6 articles?

7 A. It's well recognized that you don't  
8 always find the answers. It's in the literature  
9 in various forms.

10 Q. Where would you refer someone for,  
11 perhaps, something in the 1990s, if you will,  
12 that talks about the various metabolic tests that  
13 are performed and the conclusive or inconclusive  
14 nature of the tests as it relates to trying to  
15 come up with an explanation for why such an event  
16 would occur?

17 A. I don't know the specific reference to  
18 refer you to.

19 Q. But having said that, none of this  
20 explains the nature of the -- none of the  
21 inconclusive test results explain why Megan had  
22 the ischemic encephalopathy; correct?

23 A. I have already stated, no.

24 Q. That's a separate clinical issue which  
25 is not explained away or by what you did in this

1 case?

2 A. I don't know if it's separate or not.

3 I don't know what that means.

4 Q. There is nothing that you have come up  
5 with that indicated why there was such a profound  
6 ischemic encephalopathy in this case; correct?

7 A. Correct.

8 MR. MISHKIND: Let's take a couple  
9 minute break

10 (Thereupon, a recess was taken.)

11 Q. Doctor, I just have one other question  
12 for you and then I am done.

13 There was some testing done of one or  
14 both of the parents, I believe, after Megan died  
15 to try to determine something.

16 My question to you is -- and I believe  
17 it was requested by Dr. Robin -- are you aware of  
18 that?

19 A. No, I'm not actually.

20 Q. I lied. Actually have one more  
21 question.

22 Do you know a reason that blood tests  
23 would be done on the parents in this context?

24 MS. MALNAR: Objection. Go ahead.

25 A. Not in the context that I was

1 considering. I don't know what Dr. Robin was  
2 thinking.

3 MR. MISHKIND: I have no further  
4 questions.

5 A. If you tell me the tests, I will tell  
6 you what it's indicated for.

7 Q. I would if I knew, but I can't, so I  
8 won't.

9 MR. MISHKIND: I have no further  
10 questions.

11 EXAMINATION OF ARTHUR B. ZINN, M.D., Ph.D.  
12 BY MR. NORCHI:

13 Q. I have some, doctor. I represent the  
14 defendant in this case. Dr. Zinn, my name is  
15 Kevin Norchi.

16 You mentioned earlier that you were  
17 given a list of tests to perform or have  
18 performed; is that correct?

19 A. I was given a list of differential  
20 diagnoses -- not given a list. In reviewing the  
21 chart, there was a list prepared by the  
22 neonatologist as well as one in Dr. Cohn's  
23 consultation.

24 Q. So there was a differential diagnosis  
25 in the discharge summary from the chart at

1 Rainbow Baby and Children's Hospital. Is that  
2 what you are talking about?

3 A. No. I don't know. I wasn't given a  
4 list. In the discussions either with  
5 Dr. Walsh-Sukys or Dr. Dahms in going over  
6 things, I reviewed Dr. Cohn's set of  
7 recommendations, as well as any that they had  
8 advised me that their own people had considered.

9 Q. It wasn't clear from your earlier  
10 testimony. It sounds as though somebody gave you  
11 a list of potential diagnoses.

12 A. It may have felt that way, but it  
13 wasn't actually being given a list. I generated  
14 a list, I suppose.

15 Q. Do you have a copy of that list you  
16 generated?

17 A. No.

18 Q. Did you actually write out or type out  
19 or have printed out this list?

20 A. I didn't.

21 Q. Did anybody?

22 A. The list of tests are the ones that  
23 are listed through Dr. Dahms' note. That's what  
24 that list was generated to use for. So in her  
25 summary, she goes through the various

1 considerations that were made prior to and after  
2 death.

3 Q. Were you involved in discussions with  
4 Dr. Dahms when she prepared that list or did you  
5 get involved after she prepared her list?

6 A. Dr. Dahms got involved after the  
7 death, so at some point Dr. Dahms and I spoke and  
8 generated a list together.

9 Q. So that's a list you and Dr. Dahms  
10 generated?

11 A. As I indicated before, I had  
12 discussion with Dr. Dahms.

13 Q. I know that. I am wondering where the  
14 list came from; that's all.

15 A. From our discussions of our  
16 considerations before death and what the autopsy  
17 might have suggested to amend that list.

18 Q. And then your responsibility after  
19 receiving this list was to coordinate certain  
20 genetic and metabolic tests?

21 A. I didn't receive it, I generated the  
22 list.

23 Q. After you and --

24 A. See, the list that was in the chart  
25 was a list of differential diagnostic



1 considerations. The reason they wanted my help,  
2 they wanted to know how to translate that  
3 efficiently and effectively into a list of tests  
4 that could answer whether any of these  
5 possibilities are the case or not.

6               So Dr. Dahms is a fine pathologist,  
7 but she needs help. In actually saying if you  
8 are going to look for pyruvate dehydrogenase  
9 deficiency, then what tissues do you need and  
10 where do you send it. And so that's what we  
11 generated together.

12           Q.     So if I understand you correctly, Dr.  
13 Dahms provided the identity of particular  
14 deficiencies that she thought might possibly  
15 exist and then your involvement was to identify  
16 the tests?

17           A.     We review the records together, if you  
18 will.

19           Q.     Well, you can clarify. I appreciate  
20 your help. But then you identify tests that  
21 could be done to identify whether or not each of  
22 those or any of those conditions existed?

23           A.     Correct.

24           Q.     And then from there, then it was your  
25 obligation to coordinate these tests?

1           A.     To have pathology send the appropriate  
2     samples to the appropriate laboratory. I never  
3     physically carried samples and I never have  
4     responsibility for performing tests.

5           Q.     But it was your job, if you will, your  
6     obligation, to direct certain specimens to  
7     certain pathologists or laboratories?

8           A.     Correct.

9           Q.     And as you mentioned, you did not  
10    perform any of these tests yourself; correct?

11          A.     Correct.

12          Q.     The test results came back to you,  
13    though; is that correct?

14          A.     Copies came back to me.

15          Q.     Was the purpose of you receiving those  
16    copies of those test results to interpret the  
17    test results?

18          A.     **No.** The interpretations were provided  
19    on the reports.

20                 The other reason I was asked to get  
21    involved, and the reason I actually agreed to get  
22    involved was that someone had to communicate with  
23    the Kaschaks. And since I had been previously  
24    uninvolved, part of my neutrality, people  
25    thought, would be useful to communicate with the

1 Kaschaks.

2 Q. Okay.

3 A. So what I needed to do was, my hope  
4 was that when everything was done, I would sit  
5 and meet with the Kaschaks and help them deal  
6 with and understand the information and use it  
7 appropriately.

8 Q. You testified earlier that there were  
9 certain inconsistent test results; correct?

10 A. Correct.

11 Q. Was it your responsibility in this  
12 setting to look at all the test results and  
13 determine whether they were consistent or  
14 inconsistent?

15 A. That was part of my responsibility. I  
16 was ultimately going to sit down with the  
17 Kaschaks and do that, correct.

18 Q. Did anybody else, any other physician,  
19 have the responsibility of looking at all the  
20 test results, determining whether they were  
21 consistent or inconsistent with a particular  
22 diagnosis?

23 A. None of the physicians who had cared  
24 for Megan had that responsibility. Michele  
25 Walsh-Suyks had asked me to do that for her,

1 thinking I was more qualified, so I would talk  
2 with her about the results in that context.

3 And I know, I think on at least one  
4 occasion, she got back with the Kaschaks and  
5 tried to communicate what I would say to her,  
6 because she knew them already.

7 Q. So if I understand, the test results  
8 came back to you and because of your  
9 qualifications as a medical geneticist, you  
10 interpreted those test results, arrived at some  
11 conclusion or inconclusion, as it were?

12 A. Right.

13 Q. And communicated that to the Kaschaks  
14 and to Dr. Walsh-Suyks; correct?

15 A. Correct. I also spoke with the  
16 laboratory directors if I had questions about  
17 interpretation, and on at least, I think, a  
18 couple of occasions where there was ambiguities,  
19 the laboratory actually redid certain tests and  
20 tried to refine their assays, so I had  
21 communication with the laboratory.

22 Q. So you did speak with the lab  
23 directors or physicians at the labs and perform  
24 these tests?

25 A. The lab directors, yes.

1 Q. Did you keep any notes regarding your  
2 discussions with any of those individuals?

3 A. No.

4 Q. Do you have any notes regarding any  
5 discussions you had with the Kaschak family or  
6 Dr. Walsh-Sukys or anybody?

7 A. Probably not.

8 Q. Why do you say probably not?

9 A. Because the computer systems have been  
10 changed and I don't know if I wrote anything on  
11 the old computer. As a habit, I generally  
12 didn't. I would generally wait until I had met  
13 with the family and summarize our discussions  
14 that way.

15 Q. You mentioned earlier that there were  
16 abnormalities found on some of the test reports;  
17 correct?

18 A. Yes.

19 Q. I would like to ask you some questions  
20 about them.

21 On the first page -- I believe it's  
22 Exhibit 1 that was marked -- there is an electron  
23 transport chain report for specimen type skeletal  
24 muscle?

25 A. Correct.

1           Q.     And that's an ETC assay dated  
2     September 29, 1997?

3           A.     Yes.

4           Q.     Just to make sure we have the same  
5     page.

6           A.     Yes.

7           Q.     There are abnormalities noted in the  
8     interpretation below, the bottom part; correct?

9           A.     There are abnormalities noted in words  
10    below, and to the right of the last column there  
11    are H's and L's, which means H is high and L is  
12    low. So that's the first designation of an  
13    abnormality.

14          Q.     What is a complex I, complex II and  
15    complex III?

16                 If that requires an hour long  
17    dissertation, I will probably abandon the  
18    question.

19          A.     If you can imagine that the  
20    mitochondria is like a carburetor and that it  
21    mixes the fuel, and the oxygen that you  
22    contribute, the mitochondria's job is to burn  
23    that and make energy. There is different parts  
24    in the mitochondria -- you **call** those parts  
25    complexes -- so there that laboratory measures

1 four different parts of the carburetor.

2 Q. On the second page of Exhibit 1, do  
3 you see under interpretation by Dr. Kerr, next to  
4 that is a date, October 14, 1997, he identifies  
5 that in the assay of the electron transport  
6 chain, the postmortem skeletal muscle showed a  
7 defect in the later components of complex II;  
8 correct?

9 A. You are reading correctly.

10 Q. First of all, if we can, is it  
11 possible to explain for me what a later component  
12 of complex II is?

13 A. Sure. If you think about the  
14 carburetor having four major parts, part II, if  
15 you take it out, you can sort of, it has four  
16 subpart components to it. So the first two parts  
17 are the early part and the last two parts are the  
18 late part.

19 Q. What is the effect of those later  
20 parts in the oxidative phosphorylation mechanism  
21 or OxPhos?

22 A. Let me go back to the parts. If you  
23 look above the line on the first page, there are --

24 A. So complex II, its job is to take the  
25 energy intrinsic to a substance called succinate

1 and get the energy out of it. So the first two  
2 components of that complex are together called  
3 succinate dehydrogenase and those sort of take  
4 succinate and gives the order over to cytochrome  
5 c.

6 The second two parts in turn take the  
7 energy from the components and give it to  
8 cytochrome c, so the way these things are named  
9 is complex II is a bridge between the energy and  
10 succinate and the energy that will be transferred  
11 to cytochrome c. So that's it.

12 Q. Are there any particular syndromes  
13 that you are familiar with that are related to a  
14 defect in the later components of complex II?

15 A. There have been reports of patients  
16 who have defects in complex II. They have a  
17 range of medical problems.

18 Q. Have you ever done any research in  
19 that particular area; that is, specifically  
20 focused on defects in the later components of  
21 complex II?

22 A. Have I, personally?

23 Q. Yes, sir.

24 A. No.

25 Q. Is this a relatively new area of



1 inquiry in the field of medical genetics focusing  
2 on defects in a particular portion of a complex?

3 A. Yes.

4 Q. Would it be fair to assume that this  
5 is an evolving area of medical genetics?

6 A. Yes.

7 Q. I will assume most areas of medical  
8 genetics are evolving?

9 A. Many are. Let me go back to two  
10 questions ago.

11 Q. That's fine.

12 A. I have not done research, but I have  
13 done all these assays. I worked in Dr. Hoppel's  
14 lab for several years and I know what they are.  
15 I often interpret these results for other  
16 patients and I have some idea what electron  
17 transport chain is about. I am defining research  
18 narrowly.

19 Q. I didn't mean to suggest that you  
20 don't understand the electron transport chain.

21 A. But you asked a specific question.

22 Q. It was specific.

23 A. And I am trying to explain what I mean  
24 by research.

25 Q. I think we understood each other.

1                   You had an opportunity to review these  
2 reports today before your deposition testimony?

3           A.     Yes.

4           Q.     The defect in the late component of  
5 complex II is one of the defects identified in  
6 these reports; correct?

7           A.     It's one of the laboratory  
8 abnormalities identified in these reports.

9           Q.     Are there any other lab abnormalities  
10 that are identified by these reports?

11          A.     I can turn the pages with you.

12          Q.     Could you, please?

13          A.     So the first page refers to the  
14 analysis on skeletal muscle done on October 1st,  
15 '97.

16                   At that point, there are actually two  
17 abnormalities. One is the assay that measures  
18 complexes I and III together was actually, let's  
19 see -- the one that measures I and III together  
20 was higher than the range. Whereas the assay  
21 that measures II and III together was lower than  
22 the range.

23          Q.     In and of themselves, do those  
24 abnormalities direct you towards any particular  
25 diagnosis or syndrome?

1           A.     Not a particular syndrome. The  
2     question is does this patient, does this girl  
3     have complex II deficiency. That would be the  
4     question.

5           Q.     And, of course, this report doesn't  
6     give you a definitive answer to that question,  
7     though, correct?

8           A.     Correct.

9           Q.     But certainly leads you towards  
10    inquiry in that direction?

11          A.     Correct.

12          Q.     Are there any other --

13          A.     Not on that page. On the next page is  
14    Dr. Kerr's interpretation, his analysis of three  
15    different -- of two different enzymes and we will  
16    just do initials. PDC and dihydrolipoamide  
17    dehydrogenase, he found those both to be normal.

18                 The next -- those are enzymes that  
19    live in the mitochondria that are primarily  
20    active in the liver as opposed to other tissues,  
21    but they are both present in other tissues.

22                 On the next page, Dr. Kerr also  
23    measured in the liver two other enzymes, pyruvate  
24    carboxylase and phosphoenolpyruvate carboxykinase  
25    and he found those to be normal, as well.

1           So that is, all the pyruvate related  
2   enzymes live in the mitochondria, but they are  
3   not directly a part of the oxidative phosphor  
4   system. They feed energy into it.

5           Q.     So there may be an abnormality in the  
6   OxPhos mechanism?

7           A.     But you wouldn't say it by assaying  
8   these enzymes.

9           Q.     Could you see an abnormality in the  
10   OxPhos mechanism by assaying skeletal muscle?

11          A.     That was done. That's what the first  
12   page is doing.

13          Q.     And that's looking for an abnormality  
14   in the actual OxPhos mechanism?

15          A.     That's correct. And this was -- yes.  
16                  On the next page what happens -- and  
17   these next four, I think, reports are from 4th of  
18   November **of** '97.

19          Q.     Charles Hoppel, Dr. Hoppel?

20          A.     Yes. And these were done after he  
21   actually redesigned some of the analyses. So  
22   they represent remeasurements with what Dr.  
23   Hoppel considered a more updated set of analyses  
24   for the same complexes that we discussed reported  
25   on October 1st, okay?

1 Q. Okay.

2 A. So he basically said that we found the  
3 stuff, we are going to change some of the ways we  
4 do the stuff in the lab, let me go back and do it  
5 over again, as well as do the other tissues.

6 Q. Who asked him to do this again; do you  
7 know?

8 A. Knowing Dr. Hoppel, he decided to  
9 change his own assays.

10 Q. Okay.

11 A. But I'm sure I had discussions with  
12 him about the difference and what he was doing.

13 The results of that skeletal muscle,  
14 again, the analysis for the succinate-cytochrome  
15 c reductase was on the low side, just on the  
16 border.

17 Q. Yes.

18 A. Whereas on this occasion, as opposed  
19 to the first, the analysis for the fourth  
20 components cytochrome c oxidase was below the  
21 range of normal and below the prime mean for  
22 controls.

23 On this occasion, though, the citrate  
24 synthase, which is the last enzyme on this page,  
25 which is used, an intramitochondrial enzyme,

1     that's not a part of the electron transport  
2     chain, but is sometimes used as a reflection and  
3     our lab uses it as that of the integrity of the  
4     mitochondria. In other words, if you're  
5     measuring it, you want to make sure what you are  
6     measuring is at least, you know, healthy.

7           Q.     What does the low result tell us about  
8     the integrity?

9           A.     It's on the board and it -- let's see  
10    if the report comments.

11                   The activity of citrate synthase, a  
12    mitochondrial marker enzyme is just below the  
13    control range.

14                   Now, so that's Dr. Hoppel's  
15    interpretation.

16           Q.     Does the low number for the citrate  
17    synthase suggest that we may have lost integrity  
18    of the mitochondria?

19           A.     That's the concern. But from reading  
20    this report, Dr. Hoppel's view is borderline. He  
21    doesn't come out one way or the other saying  
22    whether it was healthy or not.

23           Q.     Would that affect the reliability of  
24    the test in any way?

25           A.     Certainly can.

1 I just don't know how complicated to  
2 make it.

3 MS. MALNAR: Wait until he asks the  
4 question and then go ahead and answer that.

5 Q. In this report of November 4, 1997,  
6 Dr. Hoppel in the second to last sentence, he  
7 states that the activities measured on this new  
8 homogenate are similar in comparison to the assay  
9 done on September 29, 1997.

10 A. Correct.

11 Q. Do you see the results of any assay  
12 done on September 29, 1997?

13 A. That's page one. When you read the  
14 date, to me that's the date, not his signature  
15 date.

16 Q. Okay. That clears that up.

17 Do you interpret his findings to state  
18 that the assay done on November 4, 1997 is  
19 consistent with or the same as the findings on  
20 his report dated October 1, 1997?

21 MS. MALNAR: Objection. Go ahead.

22 A. I interpret just the way he said. He  
23 said they are similar. They are not identical.

24 Q. Okay. Similar?

25 A. That's the word Dr. Hoppel uses.

1           The next page then is a report of the  
2     same assays used on the liver, and here what you  
3     see is a different pattern than what you saw for  
4     the skeletal muscle. And the pattern is, I mean  
5     -- you can look at it for yourself.

6           Q.     Well, for example, the citrate  
7     synthase on the liver sample is low; correct?

8           A.     Correct.

9           Q.     Does that, again, refer to the  
10    integrity of a mitochondria that is being  
11    assayed, tested?

12          A.     Again, Dr. Hoppel's comment is that  
13    the activity of citrate synthase a mitochondrial  
14    marker enzyme is below control range.

15          Q.     What does that mean?

16          A.     That means that the marker for  
17    mitochondrial integrity is not within the range  
18    that you would like to see.

19          Q.     Does that mean that these tests are  
20    less reliable now?

21          A.     The way I can answer that is that my  
22    experience with Dr. Hoppel -- and obviously you  
23    need to talk to him directly if you want to have  
24    him interpret his own sentences -- but in my  
25    experience, what that means is what Dr. Hoppel



1 observed; that it was low, but thought that some  
2 of the other assays on balance were interpretable  
3 and that's why he phrased it this way.

4 If Dr. Hoppel's results are such that  
5 he does not think that he can do an  
6 interpretation, he will state that.

7 Q. Doctor, you were --

8 A. Should I keep going through the  
9 assays?

10 Q. Let me ask you about this one so we  
11 don't have to keep coming back. There are some  
12 abnormal results here; right?

13 A. Right.

14 Q. And you attempted to interpret the  
15 results so you could communicate with the  
16 Kaschaks?

17 A. Right.

18 Q. What interpretation can you make **of**  
19 these test results relative to Megan's condition?

20 MS. MALNAR: Just this page?

21 Q. Just this page or can't that be done?

22 A. It can be done. It's just not very  
23 useful, I mean, to interpret this page, I mean,  
24 I can read Dr. Hoppel's report and the question  
25 about the citrate synthase, sure, it makes me

1 worry whether these were intact and that's why  
2 they were being used in this test and that's what  
3 Hoppel is saying. But my experience is Hoppel is  
4 not cavalier, and if he thought he couldn't do it  
5 at all, he would've said so.

6 But if you allow me, the real  
7 importance is comparison of this with the other  
8 results.

9 Q. Okay.

10 A. And for example, on the skeletal  
11 muscle, what you found on two occasions was a  
12 succinate cytochrome c reductase, that was  
13 borderline low. On this case, you have a normal  
14 activity of succinate cytochrome c reductase;  
15 even in the context in which you are not sure  
16 what the integrity of that liver is.

17 So what I concluded was that there is  
18 not a consistent deficiency for the components  
19 assayed by this complex II, III analysis.  
20 Therefore I couldn't say that I think there is  
21 error in complex II and III.

22 There is always provisos. The  
23 provisos are that there are tissue specific  
24 defects for mitochondrial disorders. So that  
25 underscores the difficulty in interpreting these

1 things.

2           The cleanest picture is if you have  
3 one tissue that's completely abnormal or  
4 selectively abnormal and one tissue that's  
5 completely normal and then you say maybe if that  
6 corresponds to the clinical course then maybe  
7 what you have is a tissue specific defect,  
8 because the genes and the proteins of these  
9 complexes can be different in different tissues.  
10 I'm sorry to go on.

11           Q.     No.

12           A.     That's my interpretation here so far,  
13 okay?

14           Q.     Okay.

15           A.     And if you then turn to the next page,  
16 you see the results in the heart, which again,  
17 you can go through this, again the same proviso  
18 with the citrate synthase, but you see a pattern  
19 different here than you saw for the first two  
20 tissues.

21                    So what I say is, there seems to be  
22 some areas of abnormality in all the tissues.  
23 Some of them are marginal and some less marginal  
24 or borderline, but there is no consistency  
25 between or amongst the tissues.

1           Q.     Did you try to determine whether there  
2     was any tissue specific mitochondrial  
3     abnormality?

4           A.     Other than by trying to look at these  
5     and see if there was a pattern that became  
6     evident.

7           Q.     From just looking at the skeletal  
8     muscle -- well, let me ask you, is the tissue in  
9     skeletal muscle similar to tissue in other parts  
10    of the body, like heart muscle, for example?

11          A.     There are some similarities and some  
12    differences, and there are instances in which we  
13    evaluated patients and they have the same defect  
14    in both. There are other instances where they  
15    have a defect in one and not the other, depending  
16    on the particular component.

17                I don't need to make this a lecture,  
18    but there are five different electron transport  
19    chain complexes. This lab has four of them.  
20    Within those four components there are about 70  
21    different enzymes, 70 different proteins, which  
22    means there is at least 70 different genes that  
23    **do** all this. And those different genes often are  
24    expressed differently in different tissues. We  
25    do not have the ability to look directly at most

1 of those tissue differences.

2 Q. Do you find any similarity between the  
3 heart electron transport chain report and the  
4 skeletal transport chain report that permits you  
5 to come to some conclusion about any  
6 abnormalities in any of the ETC complexes?

7 MS. MALNAR: Ruling out or ruling in,  
8 or either, in general?

9 MR. NORCHI: General. I am not asking  
10 for a specific diagnosis. I understand he can't  
11 do that. So it's a general.

12 A. I can't reach a conclusion.

13 Q. And what would the conclusion be?

14 A. No, I can't.

15 Q. You can't?

16 A. I cannot.

17 Q. I thought you said you could.

18 The next report from December 11, 1997  
19 fibroblasts, there are no abnormal results on  
20 that page; correct?

21 A. Correct. The comment on that page,  
22 though, which you didn't ask me, but the comment  
23 on that page, one, you cannot measure complex I  
24 in skin fibroblast, so that's not included in  
25 there.

1                   Two, the purpose of looking at  
2     fibroblasts is that whatever might have happened  
3     with Megan during her life would not be reflected  
4     in the skin fibroblast study. You take a skin  
5     fibroblast, take a biopsy, grow it in tissue  
6     culture under as optimal conditions as you can so  
7     that it's relatively independent of the medical  
8     status, because it's done so much later and  
9     outside the body.

10                  On the other hand, what takes away  
11     from the merit to try to interpret the other  
12     results is that the tissue specificity of the  
13     other tissue is often least reflected in skin  
14     fibroblast.

15           Q.     Meaning?

16           A.     So that skin is less like heart,  
17     perhaps, than skeletal muscle is like heart.  
18     This is not always the case. Geneticists  
19     traditionally try and do fibroblast studies for  
20     the reasons I just said. They are not always a  
21     reflection of what is present in other tissues.

22           Q.     For example, if you wanted to do a  
23     tissue specific test for skeletal muscle or heart  
24     or that type of tissue, doing a skin fibroblast  
25     assay --

1           A.     Not if the test you are going to do is  
2     a functional test measuring a particular  
3     protein.  If you wanted to do a DNA base test,  
4     the genes are the same in each tissue, but how  
5     those genes make their proteins that does the  
6     work is different.

7           Q.     Okay.  That wasn't done here;  
8     correct?  That last --

9           A.     The DNA based studies I believe.

10          Q.     There were some done?

11          A.     They were done on the skeletal muscle.

12          Q.     Okay.  And these are the last set of  
13     DNA reports?

14          A.     Let me go through those just to make  
15     sure.

16                     The next page is testing for MELAS,  
17     three genetic misspellings in the mitochondrial  
18     chromosome and those were not found.

19                     The next two pages later we looked for  
20     the common genetic misspelling and something  
21     called MERRF.  And we looked for the common  
22     misspelling that occurs in patients with a  
23     particular fatty acid oxidation disorder which is  
24     abbreviated as MCAD.  That was not found.

25                     The last page, as we looked at muscle

1 for, I don't know, I think they looked for almost  
2 50 misspellings in the mitochondrial DNA in Los  
3 Angeles, and they did not find any. And they  
4 also looked not just for misspellings but torn  
5 out pages or extra pages in the genetic  
6 instructions. So the extent of our DNA based  
7 testing was for a subset of misspellings in the  
8 mitochondrial gene.

9 Q. From your earlier testimony, I  
10 understand that you did not arrive at a  
11 definitive diagnosis that Megan Kaschak had a  
12 specific metabolic or genetic abnormality;  
13 correct?

14 A. Correct.

15 Q. Based on your analysis here that was  
16 done, were you able to rule out an underlying  
17 genetic or metabolic abnormality in Megan Kaschak  
18 as being the cause for her respiratory arrest and  
19 subsequent death?

20 MR. MISHKIND: Objection. Go ahead.

21 A. I could rule out only those things  
22 that I specifically tested for and found to be  
23 consistently normal. And the enzyme assays were  
24 found to be normal on the DNA based testing. I  
25 could not rule out other possible metabolic



1 diseases.

2 Q. Were you able to rule out a  
3 deficiency, an abnormality related to the complex  
4 II abnormalities found in the electron transport  
5 chain reports?

6 A. I didn't rule it out.

7 Q. Okay.

8 A. I guess I will tell you, it was not  
9 ruled out.

10 Q. Is there any evidence in any of these  
11 reports or the autopsy reports or any information  
12 that you have suggestive of any OxPhos metabolic  
13 disorder?

14 MS. MALNAR: Did you say in the  
15 autopsy report, because I don't think he reviewed  
16 the whole thing.

17 MR. NORCHI: I did say that. Go  
18 ahead.

19 A. The concern is that some of those  
20 enzyme enzymatic abnormalities in the electron  
21 transport chain assays do, in fact, reflect an  
22 underlying problem. I just didn't say I saw a  
23 consistent pattern so I could say that's the  
24 case.

25 Q. I have had genetics issues arise

1 before in cases like this and I have often had  
2 the medical geneticists tell me who I have had  
3 look at the case that they can get me to the  
4 right state, and get me to the right city; they  
5 can tell me, in fact, what part of the city and  
6 maybe even get me to the street, but they  
7 couldn't tell me what the address was that would  
8 tell me what the exact disorder was for the  
9 problem.

10 Is that an explanation or is that --  
11 let me back up. Is that similar to what we have  
12 in this case?

13 MR. MISHKIND: Let me object to the  
14 question. It's artful, but I think  
15 inappropriate.

16 MR. NORCHI: It may be inartful too,  
17 but we will find out.

18 Q. Do you understand what I am saying?

19 A. I know why geneticists tell you that.  
20 The answer to your question, though, is we were  
21 looking for a possible electron transport chain  
22 defect and we were looking as hard as we were  
23 able to do given the limitations of what's  
24 available. We did not find something.

25 Do I worry or other people who do this

1 worry that there is something else there? Sure.

2 But I can't say we missed it. I can't say I was  
3 just next door to it.

4 Q. The results on these reports show what  
5 I think you have termed an inconclusive pattern  
6 of abnormalities; correct?

7 A. Yes.

8 Q. And you also indicated that they are  
9 suggestive of an OxPhos mechanism disorder?

10 A. No, I didn't say they are suggestive.

11 Q. Are they consistent with?

12 MR. MISHKIND: Objection.

13 Q. Or did I just use the wrong word?

14 A. They are not internally consistent to  
15 allow me to make a specific diagnosis is what I  
16 think I said.

17 Q. I think we are saying the same thing.  
18 It's an inconclusive pattern of abnormalities?

19 A. I agree with that statement.

20 Q. There are abnormalities reflected in  
21 these test results?

22 A. Correct.

23 Q. But as you review the abnormalities in  
24 each of the tests, they don't identify for you a  
25 particular pattern that's consistent with a

1 specific disorder?

2 A. Either for me or when I spoke with Dr.  
3 Hoppel about some of these, correct.

4 Q. Was there a neuropathologist who  
5 didn't -- I believe there are electron  
6 microscopies done of tissue. Is that your  
7 understanding also?

8 A. I thought there were, but I didn't  
9 specifically review that.

10 MS. MALNAR: I believe they are  
11 attached to the autopsy report.

12 MR. NORCHI: Microscopies, have you  
13 seen them, the actual films?

14 MR. MISHKIND: No, the films are not  
15 attached.

16 Q. You didn't look at the microscopies;  
17 correct?

18 A. I don't remember doing so.

19 Q. I am almost finished here, doctor.

20 MR. NORCHI: Thank you.

21 EXAMINATION OF ARTHUR B. ZINN, M.D., Ph.D.  
22 BY MR. MISHKIND:

23 Q. Just a couple questions.

24 Bottom line, the abnormalities that we  
25 talked about when you put all of the different

1 specimens together, the different reports  
2 together, and you compare the abnormalities,  
3 whether it be the skeletal muscle to the liver,  
4 to the heart, et cetera, these results in plain  
5 terms do not explain to a reasonable degree of  
6 medical certainty why Megan died; correct?

7 A. They do not provide me with a  
8 diagnosis that I can use to explain the events of  
9 Megan's life.

10 Q. The complex II syndrome that you said  
11 you could not rule out, certainly looking at the  
12 flip side, there was insufficient evidence for  
13 you to confirm to a probability the existence of  
14 a complex II syndrome; correct?

15 A. Correct.

16 Q. If there were such a complex II  
17 syndrome, of what significance would that be from  
18 the standpoint of mortality and morbidity?

19 A. As I said before, complex II  
20 deficiencies are, one, relatively rare, and  
21 associated with actually a quite broad range of  
22 medical problems.

23 Q. Are you qualified to talk to what  
24 those problems are?

25 A. I believe so.

1           Q.     What are they?

2           A.     They can be anywhere from the severest  
3     form -- I think there has been one case of  
4     complex II deficiency that's been implicated as a  
5     cause of a particular necrotizing encephalopathy,  
6     although I am not sure how strong that case is.  
7     I don't know that there is any other. I think  
8     there may be two cases in the literature, which  
9     means that the child would have it and die within  
10    the first couple years of life.

11                At the other range, there is adults  
12    who had no problems until 30s or 40s, walk around  
13    and suddenly get exercise intolerance and you  
14    can't run the same two miles as fast as they used  
15    to. Just based on the enzyme assay I could not  
16    say more than that.

17           Q.     Taking the adult scenario -- and I  
18    understand you can't say to a reasonable degree  
19    of medical probability that Megan had complex II  
20    syndrome. I ask you in terms of if, in fact, she  
21    did have that, what are the manifestations -- you  
22    have given me some of them from extreme to the  
23    adult situation. The adult situation that you  
24    are aware of, besides exercise intolerance, are  
25    they associated with any degree of increased

1 mortality --

2 A. No.

3 Q. -- in the adult?

4 A. I stated it correctly. It is simply  
5 an exercise intolerance, clinical problem.

6 Q. Fair enough.

7 MR. MISHKIND: No further questions.

8 Thanks.

9 MR. NORCHI: Thank you.

10 MS. MALNAR: You can read this  
11 deposition transcript if you would like to check  
12 for basically typographical errors. It's up to  
13 you. Would you like to read it?

14 THE WITNESS: If I don't have to, I  
15 think I'm okay.

16 MS. MALNAR: If someone orders it, I  
17 would like to have a copy of it.

18 - - - -

19 (Deposition concluded at 4:00  
20 p.m.; signature waived.)

21

22

23

24

25

CERTIFICATE

State of Ohio,

SS :

County of Cuyahoga.

I, Vivian L. Gordon, a Notary Public within and for the State of Ohio, duly commissioned and qualified, do hereby certify that the within named ARTHUR ZINN, M.D., Ph.D., was by me first duly sworn to testify to the truth, the whole truth and nothing but the truth in the cause aforesaid; that the testimony as above set forth was by me reduced to stenotypy, afterwards transcribed, and that the foregoing is a true and correct transcription of the testimony.

I do further certify that this deposition was taken at the time and place specified and was completed without adjournment; that I am not a relative or attorney for either party or otherwise interested in the event of this action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at Cleveland, Ohio, on this 28th day of August, 2000.

*Vivian L. Gordon*

Vivian L. Gordon, Notary Public  
Within and for the State of Ohio

My commission expires June 8, 2004.




1	EXAMINATION OF ARTHUR B. ZINN, M.D., Ph.D.		
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