UNITED STATES
COURT OF FEDERAL CLAIMS

THERESA CEDILLO AND MICHAEL CEDILLO, AS PARENTS AND NATURAL GUARDIANS OF MICHELLE CEDILLO,	)	
Petitioners,	)	
v.	)	Docket No.: 98-916V
SECRETARY OF HEALTH AND HUMAN SERVICES,	)	
Respondent.	)	

REVISED AND CORRECTED COPY

Pages: 1024 through 1213

Place: Washington, D.C.

Date: June 15, 2007

HERITAGE REPORTING CORPORATION
Official Reporters
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Washington, D.C. 20005-4018
(202) 628-4888
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IN THE UNITED STATES COURT OF FEDERAL CLAIMS

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Respondent.	)	

Ceremonial Courtroom
National Courts Building
717 Madison Place NW
Washington, D.C.

Friday,
June 15, 2007

The parties met, pursuant to notice of the Court, at 9:02 a.m.

BEFORE: HONORABLE GEORGE L. HASTINGS, JR.
HONORABLE PATRICIA CAMPBELL-SMITH
HONORABLE DENISE VOWELL
Special Masters

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C O N T E N T S

P R O C E E D I N G S

(9:02 a.m.)

SPECIAL MASTER HASTINGS: To those listening at home, we are ready to go up here on the bench.

(Pause.)

SPECIAL MASTER HASTINGS: Are we going to start with Dr. Kinsbourne's testimony, I assume?

MS. CHIN-CAPLAN: Yes, sir.

SPECIAL MASTER HASTINGS: Doctor, please take the witness stand.

Are you ready to go, Ms. Chin-Caplan?

MS. CHIN-CAPLAN: I am, Special Master.

SPECIAL MASTER HASTINGS: All right. Dr. Kinsbourne, could you raise your right hand, please?

Whereupon,

MARCEL KINSBOURNE

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

SPECIAL MASTER HASTINGS: All right. Go ahead, Ms. Chin-Caplan.

MS. CHIN-CAPLAN: Thank you, Special Master.

DIRECT EXAMINATION

BY MS. CHIN-CAPLAN:

Q Could you kindly state your name for the record, please?

A Marcel Kinsbourne.

Q Dr. Kinsbourne, would you give the Court your current business address?

A 158 Cambridge Street, Winchester, Massachusetts.

Q Doctor, will you give the Court a brief description of your educational background from college?

A Yes, ma'am. I was educated at Oxford University in England, and I went to Oxford University Medical School and Guy's Hospital in London for training.

After I got my British equivalent of the M.D. degree, I went into postgraduate training and specialties.

SPECIAL MASTER HASTINGS: Doctor, can you maybe move both microphones a little closer to you? The small one as well. As close as they'll get.

And speak up as well as you can so the people listening in by phone conference can hear as well.

THE WITNESS: Yes, sir.

SPECIAL MASTER HASTINGS: I'm sorry to interrupt. Go ahead.

THE WITNESS: I undertook training in medical specialties centered in pediatrics and

neurology. The period of training in England at the time was longer than it is in this country. It was 11 years.

At the end of that period of 11 years of training I obtained a university lectureship at Oxford University in experimental psychology, which has been the basic science on which I've relied in the course of my medical career.

From there I moved to Duke University Medical Center where I was appointed Associate Professor of Pediatrics and Neurology and chief of the Division of Pediatric Neurology. I was there for seven years and then moved to the University of Toronto and the Hospital for Sick Children where I was Professor of Pediatrics (Neurology).

After six years in Canada, I made the decision to no longer work in the conventional faculty fashion in terms of service, teaching and research, but to concentrate on my research program, which by that time had become significant as is reflected by the publications in my curriculum vitae.

So instead I got an appointment at a research institute, the Eunice Kennedy Shriver Center in Waltham, Massachusetts, which is dedicated to studying developmental disabilities and mental

retardation, and I was chief of the Division of Behavioral Neurology in that center.

At that time it was my responsibility to secure federal funding for our research department, and I did that for 10 years with multiple grants from NIH institutes and other agencies and stayed there until 1990.

Now, in the course of being in charge of that research institute, I probably did more clinical work than ever before because we were studying hundreds and hundreds, maybe thousands or more, of children with attention deficit hyperactivity disorder and similar conditions. We were studying them exponentially in controlled conditions, but I took a history and examined every single one of them, and I managed many of them for periods of time pro bono.

After about 1991 my personal involvement with patients dropped considerably by my own decision so that I only have been taking patients for particular reasons. We've followed some families actually for 20 or 30 years and I see others on request, but I don't have a regular practice on an automatic weekly basis anymore.

However, I have maintained close contact

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with the medical literature. I have written chapters for textbooks, notably the most prominent textbook in child neurology, Dr. Menkes' textbook, where I have contributed a chapter on disorders of mental development in every one of its seven editions, the last one being 2006.

Until about a year or two ago I gave roughly monthly grand rounds at the Boston Veterans Administration Medical Center at Jamaica Plain in Boston. They have meetings from 9:00 to 11:00 on Thursday mornings and patient demonstrations. I would take my turn with the other colleagues in demonstrating how to examine people with brain injuries, particularly ones affecting higher mental functions such as memory and language and so on.

I've also maintained contact in a more specialized way with events in a disorder which I was the first to describe and has several names, of which one of them is Kinsbourne Syndrome. Because I was the first to present that disorder, people often contact me and continue to do so for advice and information, and I've kept in touch with the science around that, which really it's an immune mediated neurological disorder.

In parallel to this work I have been engaged

in a variety of inquiries which are less directly biomedical, and my bibliography reflects what those are. In 1995, I took the position of, full-time position of Professor of Psychology in the New School University in New York where it's my responsibility to teach the graduate students basically how the brain works and, particularly with respect to disorders of high mental function, of emotion, intellect, memory and so on.

And I've now been there for 12 years, so I live in the Boston area. I commute to New York to do my university work. I then go back home and do the paperwork associated with that and also do my scholarly work and my articles and preparing for presentations at conferences and so on, and then on weekends I review medical/legal files.

My involvement medical/legally is very largely with the program at the U.S. Court of Claims. I do consult in some civil litigation. My major topic there would be defense work in cases of alleged subclinical lead poisoning, and then I have a scatter of other types of cases.

BY MS. CHIN-CAPLAN:

Q Now, Doctor, you indicated that you publish articles?

A Yes.

Q To date, how many articles have you published?

A It's a little over 400.

Q And what was the most recent article that was published? Do you recall?

A Well, the most recent one actually was a new departure for me. I'm a member of a group of, an international group of scientists, some very prominent, who are interested in sort of bridging the culture gap, the gap between strict science and other intellectual work in humanities.

Each year a question is sent to about a hundred of us, and last year the question was what are you optimistic about, and the idea is to let your hair down and speculate, so I listed in my CV an entry which is to be found on the internet in which I am optimistic about the possibility that in the future we will extend our lifespan by needing less sleep. You can understand perhaps why I particularly would be interested in that, so if you wish to be amused you could look it up.

Recently I've had a publication, an empirical publication, on the specialization of the right and left hemisphere for positive and negative emotion. I have a paper submitted on the effect of

interferon-alpha on visual function in people who are receiving it as treatment for hepatitis C.

There are a variety. Most years I have a number of articles, and they are listed in my curriculum vitae.

Q Doctor, you indicated that you're an author in the textbook by Dr. Menkes on child neurology?

A Yes. I've written chapters for other textbooks as well.

Q And have you contributed to each edition?

A Each edition.

Q What is the current edition?

A Seven.

Q Now, you mentioned Kinsbourne Syndrome, Doctor.

A Yes.

Q Is that true? What is Kinsbourne Syndrome?

A It's a neurological disorder of infants actually age nine months to two years in which unexpectedly and often abruptly they get into a myoclonic state. They have a relentless twitching of many of the muscles of the body in unpredictable sequence while they maintain full consciousness and apparently clarity of mind.

I published my article on this in 1962. The

point was, first of all, to differentiate it from acute cerebellar ataxia, which is another infant syndrome of motor instability, but actually I recognize as being different from this myoclonic state, which is nowadays called Opsoclonus Myoclonus Syndrome, OMS, or Dancing Eyes Syndrome or Kinsbourne Syndrome.

I inferred that it was immune mediated, which in fact turned out to be the case, and we treated the children with ACTH with dramatically positive effects. In fact, one could dispose completely of the motor abnormality with ACTH.

However, if you lowered the dose of ACTH beyond a certain level, which you would like to do because it's not totally safe, then the disorder would recur, and then after a few years it, as it were, burns out, and subsequent to that it does leave in most cases some learning disabilities and emotional difficulties. There are permanent consequences.

Just recently I was a co-author on an article on one of the children that I published in 1962 who was now evidently in his forties, and Dr. Pranzatelli and other colleagues and I wrote about his current state, which is still substantially impaired. There was a 43 year follow-up.

Q Was that 43 year old follow-up published?
A Oh, yes. It's listed in my CV.
Q And you were a co-author on that?
A Dr. Pranzatelli was the lead author, and I was one of the co-authors.
Q Now, Doctor, you indicated that at that time it was immune-mediated disorder. Is that still the current thinking?
A Absolutely. Yes. Of course, much more has been discovered about it now.
Q So for almost 50 years now this syndrome that you first discovered was considered to be immune-mediated by you and continues to be immune-mediated currently?
A That's correct.
Q Doctor, you indicated that you treated these patients with ACTH.
A Yes.
Q Has that treatment changed significantly?
A No. It's still used. It's now supplemented with other measures as well, but it still is recognized as being perhaps the most immediately effective of the treatments, although one tries not to keep it going for too long if one can substitute other agents. So several agents are used, but ACTH

certainly is among them.

Q So for the past 50 years the treatment that you instituted is still considered valid treatment in the treatment for Kinsbourne Syndrome?

A Correct.

Q Doctor, you're a pediatric neurologist?

A Yes.

Q Was there a board certification available for pediatric neurology when you began practicing it?

A No. When I came to the U.S. in 1967, I came with British certifications which covered my activities in neurology and pediatrics, and actually Duke University didn't particularly need me to get further certifications, but I did need to have one of the boards so that I could function as a consultant from the point of view of third party payments.

So I took the board of pediatrics, which was the first to come up, in New Orleans in early 1968 -- I remember the night before I saw Bonnie and Clyde; that sort of marked the occasion for me -- and obtained that certification.

I haven't subsequently been asked by any employer to get further certification, so I don't in fact I have not attempted the currently existing neurology/ pediatric neurology boards that are prevalent in this country.

Q But you were practicing pediatric neurology before it was recognized as a subspecialty here in the United States?

A Yes. I mean, very early. There were some pioneers like Dr. Randolph Byers in Boston, but it's amazing how that specialty has escalated.

Q Have you been associated with professional and scientific organizations?

A Yes.

Q Have you been associated with them on a national level?

A I'm sorry?

Q Professional associations and scientific organizations. Have you been associated with them on a national level?

A Well, I'm a member of numerous societies, and I'm a fellow of quite a few of them. I've been president of two of them. I don't know if that's what you mean.

Q Well, you indicated you were the president of two associations. Can you name those associations?

A Yes. One is the International Neuropsychological Society, and the other is the Society for Philosophy and Psychology, and I'm experted into both of those.

Q And have you received any special recognition awards from these societies?

A Well, actually a year ago last February there was an international meeting actually in Boston of the International Neuropsychology Society where they organized a symposium in my honor in honor of lifetime achievement, and I have this piece of paper to reflect that fact.

Q On an international level, Doctor, did you receive a special recognition award?

A International Neuropsychological Society. Yes.

Q And your lifetime achievement award was from that organization? Is that what you're saying?

A I'm sorry. I'm losing you now.

Q Did you indicate that you received a lifetime achievement award from them?

A Yes, I did.

Q Now, Doctor, have you held any appointments in the National Institutes of Health?

A Well, years ago I was policy advisor to one of the branches of the Neurological Institute, the Institute for Communication Disorders, and that's reflected in my curriculum vitae.

Q Have you been called to testify before any

governmental agencies?

A I've testified twice before the Committee for Government Reform.

Q Doctor, at some point in time were you asked to review the medical records of Michelle Cedillo?

A Yes, ma'am.

Q Could you kindly tell the Court the information that you obtained from your review of the medical records?

A The information that I gleaned from the medical records?

Q Yes.

A Yes. In brief overview, Michelle Cedillo was thought to have developed normally for the first year of her life. Her pediatric consultants, whom she saw regularly, found no abnormality in her and made no referrals to any special testing or intervention until she received the MMR vaccination at age 15 months.

Now, what happened was that seven days after the vaccination she abruptly had high fevers up to 105 lasting for four days. Then the fever abated somewhat, but then recurred I think actually on January 5, 1996, so over a period of about 20 days she had a fluctuating intense febrile response really more than one would normally expect to see after MMR

vaccine, but in the timeframe within which one would expect to see fever after MMR vaccine because it was the timeframe of the viremia, the presence of the virus in the blood.

Mrs. Cedillo described both in her affidavit and to me in conversation -- I've spoken twice to her incidentally, once I think in 2000 or 2001 when I first reviewed the case and once two days ago when I went to see Michelle at the hotel where they are staying.

Her mother described that during the fever Michelle was irritable. She cried not always inconsolably, but sometimes inconsolably, and when the fever abated she did not utter any words at all. She had had a number of words before then. She just fell silent and stayed that way, incidentally, for a long, long time.

Also, she no longer showed any interest in being held. One can see from videos, which perhaps will be discussed later, of her first year of life that she was constantly being held and by no means arched away or showed anything other than satisfaction in being held, and that was no longer the case. She didn't want to be held. She wasn't interested in interacting, even looking at her parents.

She didn't seem to respond, particularly not to any sound, particularly not when her name was called, which she had done before, and her patterns of play changed in that they became repetitive. Basically she was lining things up or attaching things in a string, and she would do that over and over.

Finally, of the items that I recall from those conversations, she had a fixation on Sesame Street videos, which she wanted to watch over and over and over and was excited to be watching at any given time.

Q Doctor, when you reviewed the medical records did you discover that a gut biopsy had been done on Michelle?

A Yes, but before I say that I should say that within two weeks of the vaccination the records reflect that Michelle began to have diarrhea, and from then on she has had various complications, which according to the records had to do with inflammation of the lining of the gut at various levels. She has been treated and is being treated for that.

Q Doctor, you indicated that she started to have diarrhea. Has that diarrhea persisted to this present day?

A Yes.

Q And has her mother sought treatment for that diarrhea?
A She did.
Q Is that reflected in the medical records?
A Yes, it is.
Q And does Michelle currently continue under the care of a pediatric gastroenterologist?
A Yes, she does.
Q And in your review of the medical records does Michelle receive treatment for her gastrointestinal disorder?
A Yes.
Q Do you recall what that treatment is?
A Well, she had Remicade I remember, and I'm sure other agents as well.
Q Okay. And from testimony that you've heard now this week are you aware that Michelle is currently receiving Humira?
A Yes, I am indeed. Yes.
Q And that is from her current pediatric gastroenterologist?
A Yes.
Q So, Doctor, when you reviewed these records at some point in time did you learn that Michelle had undergone several endoscopic procedures?

A That's correct.

Q And when you reviewed the records did they indicate that a gut biopsy had been obtained and sent off to Unigenetics?

A Yes.

Q And do you recall what the result of that gut biopsy was?

A It was positive for measles virus.

Q Now, Doctor, you indicated that Michelle started to not respond to her name and she didn't want to be held and she was lining up her toys. Did she eventually receive a diagnosis for her behavior?

A Yes. She was diagnosed as being autistic.

Q Doctor, what is autism?

A I'm inclined to say that's a good question, but the current descriptions as it were are children who have abnormality in three major domains. They have language difficulties, sometimes extending to being completely nonverbal, and when verbal the language is deviant in a variety of characteristic ways.

The child has social difficulties, which seem at least in part to have to do with lack of usual motivation to be social with other people. Part of what we're born with is an intrinsic motivation to

interact. Babies find it very satisfactory to get attention from caretakers and respond in positive ways.

It seems that the human brain is preprogrammed to look for this, but not in the case of many autistic children, and of course that disinterest in interacting with others precludes them from acquiring skills in interacting with others so they then are in part unmotivated to interact, and when they do interact or have to for various reasons are not good at it.

The third domain- These are what are called negative domains with deficits, deficiencies, lack of the usual accomplishments. The third domain is positive in the sense that characteristic movements, movement patterns that autistic children are apt to make not always, not all the time, but another characteristic when they do, which are called stereotypic movements.

It's very characteristic that whatever these children do they keep on doing. They are repetitive in their interests, repetitive in their play, and when they make these movements these are flapping movements or whirling movements which they make.

My own appreciation of it is that they make

them particularly when they are overaroused and

overanxious or overexcited and that actually these movements aren't so much an abnormality as they are the primitive tactic to calm yourself down. I've written about that. There's a published article which discusses this further.

At any rate in observation one finds these three characteristics. Of course there are more. The children get very upset if anything is changed, even what others would regard as trivial details. When they observe a scene they don't look at the people in the scene and particularly they don't tend to look at the faces, but they look off away from the faces of people.

When they regard objects, they tend to fix on little details on the surface of the ojects, of small components of the object, rather than as one typically would, the object as a whole.

The children are often peculiarly sensitive to certain sounds like say a vacuum cleaner sound. That might tremendously upset such a child and yet be totally oblvious of other sounds like being called by name.

Those children who are highly functioning enough to have interests and hobbies tend to choose hobbies that are notable for their lack of practical

utility, like dinosaurs. They love to play Legos. They like closed sets of items or a particular set of knowledge like sharks where you can actually master all of it, and none of it is going to get you.

I've yet to see an autistic child who has an interest that could be of practical utility other than computer skills, which in a way is a great gift to the highest level children or adults of this kind. So they have unusual interests, and at any one time they have one interest. They might change it to another one, but after maybe a period of years.

There are more things to describe. It's an incredibly fascinating and rich topic, but let me suffice that for the moment as a description.

Q Have you published articles on autism?

A I have published some articles on aspects of autism, yes.

Q Doctor, in your evaluation and study of autism, have there been any indications of what the cause of autism is?

A Well, yes and no. There are none and there are too many. It is as complex a situation as anyone might find in medical science.

In my current chapter with my colleague, Frank Wood, on developmental disorders I have an

extensive section on autistic spectrum disorder. It's filed with my report.

What is affected there, which is going from the medical literature, is that many, many single gene syndromes, rare syndromes which have autism, has a feature in some cases almost invariably, in many cases occasionally, but there's a great list of different syndromes, all of which are associated to some extent with an autistic outcome, and yet the syndromes themselves are different from each other so there clearly isn't one underlying cause for all this.

Actually, in child neurology that is a common situation that there are many outcomes in child neurology -- and cerebral palsy is another one, for example; epilepsy is another one -- where you have what's called a functional convergence to a particular outcome, and yet there are many possible causes that injure the brain in such a fashion that that outcome results.

I think most people working in the field of autism recognize that autism has many, many causes. Now, these recognized causes of autism, so-called medically at least to some extent to explain -- not really explain, but at least associated with clear medical abnormalities other than the autism itself --

constitute no more than 20 percent, maybe 10 percent, of all of the children diagnosed autistic.

The great majority are not single gene cases. There is no doubt that genetic predispositions to becoming autistic are very powerful, and that's been accurately described in literature and I've referenced it in my report.

However, many people believe that these predispositions don't in themselves suffice to as it were condemn the child to becoming autistic, but that they interact with certain environmental factors, and when those environmental factors interact with the predisposition, then the autistic syndrome would result.

So what I'm referring to here is what is called gene environment interaction, which is a very interesting growing field at this very time, a field of investigation. Final answers are not available, but, for instance, just a few months ago the Institute of Medicine had a special symposium dedicated to gene environment interaction and environmental factors in autism.

Dr. Tom Insel, the head of the National Institute of Mental Health, actually referred to that in the keynote address he gave at an annual autism

meeting that happened not long ago It's called IMFAR, I-M-F-A-R. It's an acronym.

In the articles I submitted there's an article by Dr. Martha Herbert, which reflects very eloquently this growing point in autism research.

So in terms of the cause of autism, what do we definitively know? Rather little outside the special syndromes. What do we to some extent understand, suspect, further pursue and maybe think likely? Quite a lot.

Q Doctor, to be perfectly clear you spoke of single gene defects. Has the literature supported that autism is caused by a single gene defect?

A Not at all, but you see the word autism is misleading because it's a compendium term for many, many different conditions which haven't had a feature in common, the behavior.

Certainly in some of the syndromic cases as well usually children also have what's called facial dysmorphology. They have observable and measurable minor malformation of the arrangement of the features, for example.

The actual genetic abnormality has been identified, but in the vast majority of autistic children, 80 to 90 percent, nobody has found a single

gene, and in

fact it's generally believed that the inheritance is polygenetic, that multiple genes are involved, not always the same assembly in every case either.

So there is a powerful genetic element, but it is thought to confirm a susceptibility and not a predestination to autism.

Q Doctor, when it's thought that there's a genetic susceptibility to developing autism, is that an indication that every child will develop autism?

A No. On the contrary, there's little doubt that some children happen not to encounter the provocative or triggering situation, whatever it is, and ther's a wide range of possibilities and not become autistic.

Even in identical twins who share the same genome, not always are both twins autistic, and When they are, not always are they autistic to the same level of severity.

Q Doctor, you mentioned gene environmental interaction.

A Yes, ma'am.

Q Does the literature indicate that the gene environmental interaction is a potential cause of autism?

A It does. There are many references to

exactly that

fact.

Q So, Doctor, to be perfectly clear, the thinking in the literature now is that the individual has a genetic susceptibility to developing autism? Is that true?

A Certainly.

Q And there's something in the environment that triggers the onset of autism? Is that it?

A Yes, although I'll restate it. In many cases, and nobody said necessarily in every case, it requires what some writers have called a second hit, a second event, to realize the potential risk in an actual development of the disorder.

One has to also remember that the term environment is used in a very broad sense, including the prenatal environment and the postnatal environment, and there are various possibilities being followed up in both of these temporal domains.

Q Doctor, when we speak of environmental causes, are you speaking of things like infection?

A Yes.

Q Metabolic disorders?

A Well, metabolic disorders would usually be inherited. They would tend to be genetic, but no one has really shown inherited disorder metabolism in the

vast majority of autistic children.

With respect to environmental causes, a broad range has been and is being looked at, including infections, which would be virus infections and various toxicities.

There are rare but very informative cases where a child or even an adolescent or adult has had an encephalitis, in some cases a herpes encephalitis, in other cases I think a cytomegalovirus encephalitis, and becomes autistic at much older than the usual age.

Of course, there is a condition called childhood disintegrative disorder, CDD, where the child may become autistic after having been normal for five or six years, so although autism is heavily biased towards the early parts of life, it is not exclusively of origin then.

Q Would vaccines be considered a potential environmental trigger?

A In my opinion, yes.

Q Doctor, you mentioned that there were different types of autism. Could you describe those different types of autism?

A There's a number of different ways of characterizing them. The standard one is to talk of autistic individuals as being on a spectrum with

infantile autism, the classical syndrome as first described by Kanner, K-A-N-N-E-R, being at one end of the spectrum and then the less severely affected case, the Asperger cases, being at the other end of the spectrum, and in between and in parallel there may be other rare syndromes like Rett Syndrome and CDD, which I've mentioned.

There's another subtyping, which I think until recently affected remarkably little attention for the interest that's in it, and that is a distinction that has to do with the manner of onset of the disorder. The majority of autistic children seem to in a sense emerge or go into or at an early point become perhaps more flagrantly obviously autistic, but in looking back one would think of them as earlier or even congenital cases.

But there is a minority which, as I mentioned earlier, has been estimated at 20 percent maybe of children who regress, who actually lose skills which they had before. Now, for a child neurologist if a child loses skills that he or she had before, that is a very important anomalous matter and requires serious attention.

There are a number of possible reasons -- certain forms of epilepsy which are hidden and not

totally obvious but cause lapses of consciousness which make the child seem deteriorated. There are certain progressive degenerative disorders which need to be picked out.

There is this regression in previously nonautistic children, and I call it autistic regression, which occurs typically, though not exclusively, in the second year of life. Now, this regressive aspect in autism actually has been known for a long time.

Looking back on the first chapter I wrote for the Menkes textbook, as I mentioned, maybe in 1974, somewhere in the 1970s, I briefly mention it and actually I think give the same incidence figure, and yet it hasn't been studied like so many other aspects of autism.

In fact, autism literature is totally enormous, and yet I am not aware of any single study which studied a child with regressive autism during the regression. I don't know how that is, but it's not available.

Now, to me that's very important because for a child neurologist if a child regresses something is happening to the brain now. In other words, there's an encephalopathy going on and one would want to study

it, but I can't find anything about it.

The studies that have been done, and there are very few, are retrospective. Usually what is done is autistic children are studied as a group and then it's mentioned 30 percent of these were regressive or whatever.

There have been a number of autopsies published of individuals with autism who died for various unrelated reasons, and these studies have been important information about the organization and deviances in the brains of autistic individuals, but not one is characterized as being a child with regression so that leaves one up in the air. Maybe some were but it wasn't noted, or maybe none were.

So I'm saying at the end of all this that with the regressive aspect of autism, particularly as it's understudied and needs enormous attention, for the child neurologist something is going on. There is a cause. What is it.

Q Is autism relatively rare?

A Well, it used to be so considered. When I was young it was rare. Everybody knows about the spectacular increase of autism diagnoses, so we now have a condition that happens maybe one in every 200 or 300 children.

In fact, I mean, I see it. I hear of children living down the street, around the corner and in the next little part of my area of Boston who are autistic. I used not to hear this sort of thing.

There's been a lot of debate about the cause or causes of this spectacular increase, which by the reckoning of some people it's three times as many and others 10 times as many. It certainly is a rate of increase not paralleling any other condition that I'm aware of, although some other conditions are also increasing, but not to this extent at all.

Now, clearly although prima facie, the condition is getting more common. I can't therefore assume that all of it is actually the condition becoming more common because maybe classifications have changed. Maybe we're better at diagnosing. We may be better at hunting down the cases for ascertainment. Maybe we used to call them by other names. I mean, there are a variety of very legitimate cushions to take care of in coming to a final conclusion about the degree of increase in the diagnosis.

Now, my appreciation of the situation as it is is that there are a number of factors that would tend to amplify the apparent increase of the autistic

disorders, but it's not been shown at all to my satisfaction that they account for all of it.

I think our responsibility is the opposite, that when such a serious disease seems to be coming more frequently, we have to assume as pediatricians, as doctors, that it is becoming more frequent unless it can be shown conclusively that actually it's not, which that has not happened, so I think that although the final answer is not yet at hand it is legitimate to suppose that to some extent this diagnosis is increasing and we need the reason for that.

Q Doctor, in your opinion the autism rate does appear to be increasing?

A Well, that's not just an opinion. I mean, that's a fact everybody accepts.

Q Doctor, you mentioned studies. Have there been epidemiological studies that have sought out the treat of autism?

A The what of autism? I'm sorry.

Q Sought out the cause of autism.

A The cause? Well, yes, indirectly. Epidemiology actually doesn't give you causes. That's not what it's there for, and you can't infer a cause of anything from just epidemiology.

What it does is to look for associations,

and then other scientific methods can further explore those associations to determine whether they're causal or coincidental or maybe they have some third cause for the relationship. That's not the epidemiology anymore.

There have been numerous epidemiological studies with a variety of outcomes, but not ones necessarily relevant to the matter at hand.

Q When you say not necessarily relevant to the matter at hand, have you found any study that has evaluated whether the combination of thimerosal and MMR could cause or was an association with autism?

A No. That hasn't been studied. At least it hasn't been published to my knowledge.

Q So there's nothing in the literature?

A No, and there's actually very little that studies regressive autism, as I mentioned before, as opposed to, as it were called, any old autism, so it's hard to know really whether the results of the overall study apply to the group of children we're interested in here.

Certainly there's been no study that has looked at a subgroup consisting of autistic children who regressed who have inflammation of the gut, which is pertinent to Michelle Cedillo, so for the single

case, the particular child on whose behalf we're assembled, I couldn't find anything in the literature to really help me.

Q So, Doctor, to be perfectly clear there's no study out there that looks at the combination of both thimerosal and mercury and its potential association with autism?

A The combination of thimerosal and MMR?

Q Yes.

A No. If there is, I haven't seen it.

Q And there is no study that looks at regressive children at all?

A Just recently, as one of the advantages of the current enormous interest in autism, there's been a wonderful increase in research efforts, and there have been one or two articles that have looked at regressive autistic individuals as compared to the ones who are nonregressive on a basis of a variety of variables, and there are some similarities and some differences.

Q And that's the one study that you found that evaluated regressive autism?

A Well, there's one study that was quite interesting that looked at the prevalence of minor congenital anomalies in autistic children as compared

to typical children and in early onset autistic children versus regressive autistic children.

Minor congenital anomalies are what they say they are, little changes in the features or maybe a so-called Simian crease, an abnormal crease across the palm of the hand or the eyes being wideset or slanting.

There's a set of markers which are generally taken as indicating something went wrong -- not necessarily serious, but something went wrong -- during pregnancy because that's when the features of the face particularly are first developed.

In that particular study children with autism had more of these than typical children because, you know, even people in the general population have some of these quite frequently, and to have one or two is considered to be normal or within normal range.

In this study, as I remember it, regressive children didn't have those any more than the typical children, which, to the extent one can interpret it, would suggest that that would not support a prenatal origin for them.

That's just a single observation, a single study, and I wouldn't want to overemphasize its

ultimate importance, but I note it with interest.

Q Doctor, in your review of the literature did you find any publication which looked at the association of thimerosal and MMR in combination in children who developed autism with GI problems?

A No.

Q Now, Doctor, you indicated that you reviewed Michelle's early developmental records.

A Yes.

Q Can you tell the Court from your review of the record whether Michelle was meeting her milestones?

A She was on the slow side definitely. Well, I know she was sitting independently by nine months because we saw it on the video, and she was sitting firmly and well. She was maybe not sitting until shortly before then, and on the average a child will sit at about six months or soon after. There is a wide range of individual variation.

She is said to have crawled at nine months, which is in one of the records -- I forget which -- and that would be quite typical. Incidentally, some children don't crawl at all, and it's not noted as being abnormal. She did it.

She's said to have walked by 16 months,

which is relatively late, though I have to admit that my oldest of my seven children walked at 16 months and was hilariously amused by his accomplishment. I can still see him laughing as he toddled across.

I can't overstate the amount of individual variability. Nonetheless, 16 months is slow. An interesting remark in one of the consultant records is that when she did begin to walk she walked very well.

As a matter of temperament, some children are reticent, but others are more risk seeking. Some children will start walking and fall on their faces and start again and start again. They're the adventure in walking. Other children really wait until they're quite sure, as it were, that they can do it properly, so maybe Michelle is one of those, but bottom line she was slow.

Q Did she demonstrate any autistic behaviors in her early childhood prior to the MMR?

A None are noted. There's nothing in the medical record to indicate any of that, and I did review the videotapes and I saw none of it.

Q Doctor, if she did manifest some symptoms of autism in a child that age, what would you find?

A Could you ask that again?

Q Yes. I said if she did manifest symptoms of

autism in a child that age, what would you be looking for?

A That's been studied systematically and particularly by Dr. Gerald Dawson, in fact, a doctor from Bonn's. Extensive literature. Two of the articles of that group are included.

It's actually surprisingly hard to sort it out when one does it in a controlled way, but my impression is that the most telling sign is the child doesn't respond to his or her name when called.

Then others are described such as the child doesn't like to be held and arches away, doesn't particularly invite interaction with herself by others.

There's some description of reacting unusually to stimuli, but what I just described is something called tactile defensiveness is the term that's used particularly by occupational therapists.

Q Now, Doctor, when you reviewed the video on Michelle did she respond to her name prior to the MMR?

A Yes, she did.

Q And when you reviewed the video on Michelle prior to the MMR did she arch away from contact with people?

A She was smiling, looking at people, engaging

with them. She was a pretty cute baby, and it was obvious from her family that they were enjoying her, that they expected her to enjoy interaction with them. Yes. I saw nothing the matter.

Q And when you reviewed the video did you notice the interactions between her family members?

A Absolutely. It was very positive.

Q And when you reviewed the video was there any indication that she was reacting abnormally to interactions with other people?

A No.

Q So, Doctor, in your opinion prior to the administration of the MMR was Michelle demonstrating any tactile defensiveness?

A None at all.

Q Doctor, did you review the video after Michelle had received her MMR?

A Yes, I did.

Q When you reviewed it after she had received the MMR what did you notice?

A Well, many things really, but most striking her happy expression was gone. Her happy expression was gone. She looked abstracted or dejected. She seemed preoccupied. I didn't see interaction.

I mean, the family was trying to photograph

her in certain circumstances, typically interacting with family members, and that didn't seem to succeed really after age 16 months. She was sort of busy doing something on the side, and she'd be keeping on doing whatever it was in this repetitive fashion.

There was one video which was very, very sad, although perhaps it was a bit later -- I don't remember the time of it -- where a therapist comes to the home to work with her. She totally panicked. You see her sort of rushing through the room making these agitated, repetitive movements, sort of tumbling away.

I mean, she seemed like she was in a total panic because a stranger came in who presumably, being a professional, didn't behave in any inappropriate manner. It was just a different personality altogether.

Q Did you review any part of a video where Michelle's name was being called?

A Oh, yes. At that point, I mean, she just ignored it. Yes, I did.

Q And when you reviewed that portion of the video did Michelle utter any sounds at all?

A I didn't hear her do it, and I understood from history that she was silent.

Q In any discussions with Mrs. Cedillo did

Mrs. Cedillo indicate whether or not Michelle still had speech after these high fevers?

A She doesn't have much of any, no.

Q Now, Doctor, you've reviewed the medical records. Is that true?

A Yes.

Q And in your review of the medical records did you find that there was a positive measles gut biopsy?

A Yes, I did.

Q Doctor, what is measles?

A Measles is a virus. It's an infective virus which causes the familiar condition of measles. We call that a wild virus, which is well known to people as one of the childhood infectious disorders which fortunately, because of vaccination, isn't seen as much anymore.

Now, from the point of view of neurology -- well, first of all, the measles virus itself has the following characteristics which are element to Michelle's case and many others of course too that it is lymphotropic. It can initially as it were to accumulate in lymph nodes, and that's where it exerts its effect on the immune system because it is well known to be immunosuppressive.

It is also enterotropic, meaning that it tends to head for the lining of the gut, and it is neurotropic that has an affinity for nervous tissue. In that respect there are some diseases of the brain which can complicate the measles.

The most important of these and what used to be the most frequent is measles encephalitis, which is a disorder of the brain which comes on within a week or two of an attack of measles and is thought to be autoimmune and can be devastating or deadly. In fact, my understanding is that maybe the major rationale for measles vaccination is to stop this happening, and it has enormously decreased in frequency.

Now, there are much rarer other conditions which take a much longer time before they begin to occur. One is called MIBE, and that's a condition in which it's called IB because of inclusion bodies, which really means that you can see various particles by special methods in cells in the brain.

MIBE would occur a number of months after a vaccination, a number of months after the wild measles infection. However, I did include in my bibliography and submitted to the Court an article by Bitnun, B-I-T-N-U-N, in which a case of MIBE occurred eight and a half months after measles vaccination, and at

autopsy they were able to recover the virus and sequence it and show that it was vaccine strain.

So in this rare example the measles virus vaccine caused that, so it hung around for about eight months. It was able to persist. Normally the measles virus would be cleared within four to six weeks, but obviously not in this case.

And then well known, but also very rare, is SSPE, subacute-sclerosing panencephalitis, and that has a latency of anything from eight years to 30 years, but then when it recurs it's been well described it is deadly after a slow, long progress.

Q Now, Doctor, is there a period of time after measles when one would expect to see complications associated with measles?

A Well, that depends on the complications. There is a period of time when the virus is in the blood and before the immune system has cleared it where acute complications would presumably occur.

Ideally one wouldn't expect to see any after say six weeks because ideally the immune system would have dealt with the problem. So If one sees complications arising from measles virus later then the measles must have persisted to that point, which means that the immune system failed to eject it or

destroy it, which does indicate some lack of competence on the part of that particular individual's immune system.

Q Are you saying that for those people who have developed persistent measles infection, such as in MIBE and SSPE, that the reason that measles persist is because of some sort of immune dysfunction?

A Well, the immune system manages to get rid of the measles virus in countless millions of people because vaccination is very prevalent, and this is an aberration that the virus remains.

Q Now, Doctor, going back to Michelle's clinical history here, it's been noted that the fever began roughly seven days after the immunization?

A Yes.

Q Did that coincide with any known properties of the measles vaccine?

A Fever doesn't follow every MMR vaccination, but when it does that's about when it might occur, the second week after the vaccination.

Q And what would be the reason for that?

A Because in that timeframe the vaccine virus is multiplying in the blood. It's called viremia.

Q And is that the point in time when you expect to see the viremia to occur?

A Yes, and sometimes you even see a little measles rash at that time because it's an attenuated measles virus, but still a live virus and still has the same properties, although much attenuated.

Q So Michelle's fever occurred at the right timeframe in which you would expect to see a fever after a measles immunization?

A Correct.

Q Doctor, you indicated earlier that measles has a lymphotropic effect. What did you mean by that?

A The measles virus tends to migrate to lymph glands, and actually it has an affinity for certain cells within lymph glands called dendritic cells. They've been mentioned before by some previous testimony. Dendritic cells take part in developing immunity to the measles and immunity to subsequent exposure to the same virus.

In the biopsies of the gut lining in cases where this inflammation occurred I understand that more significant findings were in those little collections of lymphoid tissue close to the mucosa of the gut.

Q Now, Doctor, the lymph glands are part of the immune system?.

A Yes.

Q Is that true?

A Yes.

Q We've heard testimony that measles is an immunosuppressant. Is that true?

A Correct. That's well known.

Q Does the literature indicate at what point in time that immunosuppression begins?

A I am not certain. I would defer to an immunologist for the exact time. It certainly begins very soon after the infection, but I can't tell you exactly.

Q Were you present for the testimony of Dr. Kennedy?

A Yes.

Q Do you recall Dr. Kennedy indicating that the period of immunosuppression began at approximately one week after exposure?

A Well, you reminded me of it.

Q Doctor, Michelle's fever. It occurred within the period of maximum viremia. Is that true?

A Yes.

Q And it also occurred at a time when the immune system was starting to be affected. Is that true?

A That would be correct.

Q And you indicated that it extends out to roughly 14 days. Is that true?

A Yes.

Q And from seven to 14 days did Michelle have recurrent fever?

A Yes, she did, and high fever. Unusually high. The fever that you get after MMR tends not to be that high.

Q Now, Doctor, you also indicated that measles is a neurotropic virus.

A Yes.

Q What do you mean by that?

A It has an affinity for nervous tissue. That's not to say it always gets there, but it tends to settle in the nervous system if it has the opportunity to do so.

Q And you indicated also that it was enterotropic. Is that correct?

A Yes.

Q What does that mean?

A That it tends to settle in the lining of the gut.

Q Doctor, when you look at Michelle's case does she have an enterotropic problem?

A Well, she has an enteritic problem, which is

consistent with an enterotropic agent.

Q And has an enterotropic agent been recovered from her gut tissue?

A Yes.

Q And what was that enterotropic agent?

A Measles virus.

Q Doctor, does Michelle have a neurological disorder?

A Yes, she does.

Q And what is that neurological disorder?

A Autistic disorder.

Q Doctor, when you reviewed the literature and you were looking at the literature for viral persistence did you find any literature which indicated how viruses could persist in the brain?

A You're saying the brain?

Q The brain or the nervous system.

A Right. Yes, there was some.

Q And what in the literature did you find?

A Well, the dominant way for virus to persist is within cells, so they could be within the cells in the brain, and just for clarity let me go with the distinction that there are two main categories of cells in the brain, the neurons and the glia.

The neurons, of course, do the basic work of

the brain and to control organs. The glia are more like connective tissue cells, including cells of the immune system as it manifests in the brain.

SPECIAL MASTER HASTINGS: Doctor, the second type? Can you repeat that?

THE WITNESS: The glia, G-L-I-A.

SPECIAL MASTER HASTINGS: Okay. Thank you.

THE WITNESS: So you have, for example, the astroglia, which is because they're shaped like stars allegedly, and they are very, very prevalent in the brain. They're in between the neurons, scattered in among the neurons.

Then there are two important subsets. One are called the oligodendroglia. They are the cells that manufacture the fatty sheaths along the axous, the so-called myelin, which makes it possible for neurons to communicate with each other at long distance.

The other are the microglia, which are the immune cells. These are the cells that become activated if there is an immune challenge. They are part of the so-called innate immune system, which was described by previous testimony.

SPECIAL MASTER VOWELL: Doctor, did you say microglia or macroglia?

THE WITNESS: Micro, M-I. Yes, that's right.

MS. CHIN-CAPLAN: Doctor, I'm going to refer you to your report on page 11. Your report.

If I could just have a moment, Special Master?

(Pause.)

BY MS. CHIN-CAPLAN:

Q Page 11 of your report, Doctor.

A Yes.

Q Are you there?

A I am on what alleges to be page 11, yes.

Q Doctor, in your report on page 11 you indicated that you reviewed an article by Dr. Oldstone. Is that true?

I'm referring the Court to Petitioners' Exhibit --

SPECIAL MASTER HASTINGS: Sixty-one.

MS. CHIN-CAPLAN: -- 61-DD. VV.

SPECIAL MASTER HASTINGS: VV? Okay. I see. You want to go to the exhibit? To the tab? Okay.

MS. CHIN-CAPLAN: Yes.

SPECIAL MASTER HASTINGS: Great.

BY MS. CHIN-CAPLAN:

Q Doctor, did you review an article by Dr.

Oldstone?

A Yes. I have a reference to it in front of me under the subheading of Viral Persistence and Disease.

MS. CHIN-CAPLAN: May I just approach the witness, Special Master?

SPECIAL MASTER HASTINGS: Go ahead.

MS. CHIN-CAPLAN: I'm afraid I'm going to have to ask questions over his shoulder.

SPECIAL MASTER HASTINGS: Okay.

BY MS. CHIN-CAPLAN:

Q Doctor, what is the title of this article?

A Viral Persistence, Parameters, Mechanisms and Future Predictions.

Q And who is it authored by?

A Michael B.A. Oldstone.

Q Are you familiar with Dr. Oldstone's reputation within the community?

A Yes. It's a very high reputation.

Q Doctor, under Introduction would you kindly read to the Court that first paragraph by Dr. Oldstone?

A Yes, ma'am. "One of the remarkable advances in modern virology is the realization that persistent viral infections exist and are common. Hence,

understanding the principles by which persistence is initiated and maintained, as well as the pathology consequences of continued virus replication in a host over its life in terms of causing disease, provides research areas of high significance, as well as opportunities for challenging investigation."

Q Doctor, does Dr. Oldstone later on in this article indicate how viruses can persist?

A Yes.

Q Could you tell the Court what Dr. Oldstone indicates?

A Well, what he says is the host immune response --

SPECIAL MASTER HASTINGS: Are you going to read from something?

THE WITNESS: Well, it's actually a continuation from the next paragraph from where I read.

SPECIAL MASTER HASTINGS: The very next paragraph?

THE WITNESS: Yes.

SPECIAL MASTER HASTINGS: Okay. Fine.

THE WITNESS: I'm sorry. I should have said. Let me just read the whole of it.

"The key foundations upon which the

understanding of persistent infection rests are first that the host immune response fails to form or fails to purge virus from the infected host. Thus, viral persistence is synonymous with evasion of the host's immunological surveillance system. Recent advances have shed light on the cellular and molecular players involved. Secondly, viruses can acquire unique components as to factors of replications."

BY MS. CHIN-CAPLAN:

Q And does that sentence continue on by saying: "Viruses can regulate expression of both their own genes and host genes to achieve residence in a nonlytic state within the cells they infect."

A Correct. To say nonlytic state means that the virus is inside the cells, but the virus does not destroy the cells. In other words, the virus lives within a cell that remains intact, although its function is likely to be impaired.

Q Doctor, you were in here for the testimony of Dr. Kennedy?

A Yes.

Q Do you recall Dr. Kennedy saying that a virus could persist in a cell?

A Yes.

Q Do you recall his testimony that if the cell

is destroyed that is the way the virus can no longer persist in the cell?

A Right. In that way the virus is really like a suicide bomber. It destroys the cell and itself at the same time.

Q Doctor, what was the third conclusion, the third point that Dr. Oldstone wanted to make in his article?

A Yes. This is now on the same page, and it begins at line 5 on the right. "Third, the type of disease that persisting viruses cause are often novel and unexpected."

Q Thank you, Doctor. Doctor, in this article too did Dr. Oldstone mention the measles virus at all?

A I'm sure he did. It was mostly using the LCMV virus for illustration, but he certainly had worked extensively with the measles virus. Here's a mention here.

SPECIAL MASTER HASTINGS: You need to speak up a little, Doctor. We're not quite getting it.

THE WITNESS: I'm sorry.

SPECIAL MASTER HASTINGS: You need to speak up. Your last two sentences we couldn't hear.

THE WITNESS: I'm sorry. I tend to mutter to myself.

The mention of the measles virus, for example, in the caption to Figure 2 on page 115, but I would have to re-read the article to see specifically what he said.

MS. CHIN-CAPLAN: Thank you.

BY MS. CHIN-CAPLAN:

Q So, Doctor, after reviewing that introduction is there a take away message from this introduction?

A Yes. What I glean from it is that more disease and more diseases are probably caused by viruses persisting inside cells, including cells of the nervous system, than we currently appreciate and that a mechanism that invokes viruses persisting in cells is a biologically plausible, medically reasonable mechanism to invoke when trying to explain disease.

Q Doctor, were you here for the testimony of Dr. Byers?

A Yes.

Q And did you hear Dr. Byers speak of the effect of systemic inflammation on the blood-brain barrier?

A Yes.

Q Did you hear her testimony about -- strike

that.

Could you kindly tell the Court what Dr. Byers indicated was the effect of systemic inflammation on the blood-brain barrier?

A The inflammatory process generates or is fueled by and disperses into the circulation proinflammatory cytokines, and proinflammatory cytokines circulating from the locus of inflammation when the circulation reaches the blood vessels that irrigate the brain, which is where the blood-brain barrier is located, these cytokines are capable of breaching the blood-brain barrier such that the brain is no longer protected from larger protein particles which could be infected.

Q Doctor, once the infection breaches the blood-brain barrier do you recall or do you know what happens within the central nervous system?

A Well, once the infection has caused the blood-brain barrier the infectious agent might be found in the cerebrospinal fluid. If it is found in the cerebrospinal fluid it's a virtual certainty that it's also in the brain itself.

Q And to your knowledge is there a specific area of the brain that the infection would affect?

A It depends really on the infectious agent.

For example, the herpes virus has an important affinity for the medial temporal lobes. People who survive a severe herpes virus encephalitis attack will tend to often have severe memory problems because that's one of the things that area does.

Other virus infections are less specific. For example, in SSPE I don't believe there is a specific area that is affected more than others, but rather the infection spreads from neuron to neuron and so it differs.

Q Doctor, I'm going to refer you to Petitioners' Trial Exhibit No. 9, page 38. This is one of the slides that was presented to Dr. Byers or that Dr. Byers presented to the Court rather.

Could you read the title of this slide to the Court?

A The title is Effect of Inflammation on the Microglia of the Brain. It is derived from an article by Qin, Q-I-N, et al. in 2007.

SPECIAL MASTER HASTINGS: This is page 38 of Dr. Byers' Trial Exhibit 9?

MS. CHIN-CAPLAN: Correct, Special Master.

BY MS. CHIN-CAPLAN:

Q Doctor, what are microglia?

A The microglia are glial cells, as I

explained, not neurons, and they are part of the innate immune system as it is represented in the brain.

Q And what do they do as part of the innate immune system of the brain?

A Well, when they're activated by a foreign antigen, something entering their space which they aren't acquainted with as it were, they will do what it says in this abstract, which is they would increase the expression of brain proinflammatory factors.

In other words, they will cause cytokines to be released which cause inflammation. Several of these are named in the abstract.

Q Doctor, does that mean that they're the immune system of the brain?

A Yes.

Q Doctor, when somebody has a localized infection can it become systemic?

A Yes, indeed.

Q And when I say systemic, could you tell the Court what that means?

A Well, the infection can be localized or be in an abscess which has a fibrous wall around it so the infection can't spread beyond it. On the other hand, nothing can get in it to stop it happening.

Antibodies can't get in.

However, if the walls rupture or the wall doesn't form then the infection can spread. It can either spread locally to neighboring territory within the affected organ or it can spread by the blood, circulation, and when it's in the blood it's called septicemia when it's bacteria anyway. Then it can spread to any organ in the body, of course, because all organs of the body are irrigated by blood vessels.

Q You indicated that it can spread to all organs of the body. Does that include the central nervous system?

A It certainly does.

Q Does the brain have a certain amount of protection from infection?

A Well, the blood-brain barrier, when it's intact, protects it to quite an extent.

Q When there's a systemic infection, what effect does that have on the blood-brain barrier?

A Well, as described, it can cause breaches in the blood-brain barrier at which point the protection is no longer present.

Q So any infectious agent could come in and infect the brain at that point?

A In principle, yes.

Q Doctor, if there was an infectious measles virus in the body would it be able to breach the blood-brain barrier?

A It could be able to pass through a breached blood-brain barrier.

Q And once within the brain what would happen then?

A Well, it would settle in those cells for which it has affinity, and it actually might very well settle in the glial cells, the astroglia and the microglia, though it can also settle in neurons, but it would enter cells.

Q Doctor, after your review of the records and the relevant literature, do you have an opinion whether the measles RNA which was found in Michelle's gut tissue was a substantial contributing factor in the onset of her autism?

A I have the opinion that the measles vaccine virus, traces of which were discovered in the form of measles RNA, was a substantial factor in the causation of Michelle Cedillo's autism.

Q And could you tell the Court what the basis of your opinion is?

A Yes. The fact of the presence of the measles vaccine virus, and I say measles vaccine virus

because she was vaccinated and because she has no record of having had wild measles and because in my experience in the literature there are similar cases where the virus material has been sequenced and shown to be a vaccine virus.

The measles vaccine virus in her case was not rejected by her immune system, what was able to persist, and was therefore a potentially neuropathic agent harbored in her body, and when one keeps that fact in mind in relation to the fact that she did have an otherwise unexplained encephalopathy in the form of the regression that we have already discussed then in my opinion that is the number one suspect for the cause of the regression or the encephalopathy which implemented the regression leaving her in the state in which she remains.

Q Doctor, as part of your opinion have you considered the potential mechanism by how this could have occurred?

A When you say "this" are you talking about the brain damage?

Q Correct.

A Yes. Yes, I have.

Q Could you tell the Court the opinion you have formed?

A Well, I think I should actually divert into a brief account of what the present state is of knowledge of how the brain looks in a case of autism.

Q Okay.

A Because there are a number of studies pertaining to that.

From the point of view of the structure of the brain, there are a number of findings. One finding is that in many cases the cells in the hippocampus, which is part of the medial temporal lobe of the cortex, and the cerebellum and also sometimes in the medulla are disorganized. They're not lined up in the appropriate way.

The big cells in the cerebellum called the purkinje cells, P-U-R-K-I-N-J-E, are deficient, impaired, but there's also information that the organization of the gray matter of the cortex itself is impaired.

The picture is that the gray matter, which is the cortex, is sort of on the outside of the cerebrum, and it has the neurons in it. The inside is the white matter, which is just a communication system.

Now, the cells in the gray matter are arranged in columns at right angles to the surface so

it's a columnar arrangement. It's a very orderly arrangement of columns all over the cortex. A disorganization of these columns has been described in autopsy material of the brain.

Another finding which has been achieved by MRI, by neuroimaging, is that in the younger cases -- and these things can change over the years -- the area of the brain which is white matter which lights up in that fashion on the scan is greater, more voluminous than it should be, particularly in the area behind the frontal lobe. This is work particularly by Dr. Martha Herbert, which is represented in my bibliography.

Now, the nature of that enlargement of the white matter is unclear. It could be that there are more fibers, but that's not thought to be likely. It could be the fibers are swollen, or it could be that the spaces between the fibers have increased and maybe because of inflammation and edema fluid and it's not been resolved.

Now, in addition to the study of the static organization of the brain in autistic individuals, there's also been some work on the function of cells in the brain of autistics as it deviates from what is expected in normal cases. And the chief publication is one by Vargas, V-A-R-G-A-S, et al. from Johns

Hopkins. It's a very important article. This incidentally is the group to which Dr. Zimmerman, whom we'll hear from later in the proceedings, he's a member of that group.

Now Vargas, et al. presented two types of information, one type on autopsy material of individuals with autism who had died and one on cerebral spinal fluid taken by lumbar puncture from autistic individuals who were of course alive.

Now, in their examination of the tissues of the brain at autopsy they noted areas of inflammation. This is a very important observation in my view because it is an indication that autism, at least in many cases, isn't what it had been considered to be.

It had been considered to be a static encephalopathy as it were. Something went wrong maybe in the first trimester of pregnancy and then the individual is left with an abnormality of development which then remains for the rest of their life.

This indicates rather that the individual who is autistic has in his or her brain an ongoing disease. There's an active process smoldering over the years, and I think the notion that autism is more than a disorder, it's a disease, is a very important one. There are numbers of sources of indications that

it is an appropriate concept for many autistic individuals.

Now, the information was of the type that characterizes a response of the innate immune system, and what was found in particular was the involvement of the astroglia and the microglia. The microglia were discovered activated, which means that they were actively responding to the presence of some agent that they considered foreign.

Now, you can have microglia activation in a variety of circumstances, and the interpretation is not always the same. The main distinction is that the microglia may be activated in response to an invading agent, or an invading agent might have destroyed neurons and the microglia may respond to the breakdown product of the neurons, which is also foreign material, so you can't immediately determine which is the case.

This case is in point. You get microglia activation in Parkinsonism and in Alzheimer disease, and the interpretations are debated. Certainly the response of the microglia in these autistic brains is compatible with the notion that there is a foreign agent to which they are responding.

The fact that this response was the case at

autopsy suggested it had been going on a long time, which means that this response was not effective in removing the invading agent. In other words, it must still be sitting in the cells so this is what Dr. Oldstone called noncytolytic.

The virus is in the cells. It stimulates an immune response against it. That immune response is not effective, but that immune response can nonetheless injure cells in the neighborhood, sort of bystander cells. There is other evidence of the gliosis of astrocytes, meaning scarring of the astrocytes, which suggests that the astrocytes were being inactivated or destroyed by an immune attack.

Why is this important? Well, one reason why it might be important, and there's certainly I'm sure other interpretations, has to do with one of the important functions of astrocytes. To explain this again, that's a segue for a moment into some more general comments.

In the human brain there are so-called neurotransmitters. These are chemical messengers that assist in communication between neurons and other neurons, and they're of two kinds. There are the excitatory ones where the receiving neuron is activated by the message that it gets, and there are

the inhibitory ones where the receiving neuron is inhibited by the message that it gets.

SPECIAL MASTER HASTINGS: What was the second one? The first one was excitatory?

THE WITNESS: Correct, sir.

SPECIAL MASTER HASTINGS: And the second one was?

THE WITNESS: Inhibitory.

SPECIAL MASTER HASTINGS: Inhibitory?

THE WITNESS: Correct. The inhibitory, as the name suggests, if a cell receives an inhibitory message it will tend to diminish its firing rate.

It's essential in the brain that there be a balance maintained between excitation and inhibition. If there's too much inhibition the business of the brain can't proceed. If there's too much excitation then it also can't proceed and seizures may occur, for example.

I should mention, because I haven't already, that within the last few years Michelle has initiated a serious, severe seizure disorder which does happen in severe cases of autism and perhaps more frequently in the regressive type than in the standard type.

Now, the way that the housekeeping of this inhibitory/excitatory balance is maintained does

involve the astrocytes.

SPECIAL MASTER HASTINGS: It involves the what?

THE WITNESS: The astrocytes.

SPECIAL MASTER HASTINGS: The astrocytes?

THE WITNESS: Right. Those glial cells that I was mentioning as being affected by the inflammation in the Vargas study.

SPECIAL MASTER HASTINGS: Okay. But these are different from the astroglia?

THE WITNESS: No. They are the same. I'm sorry.

SPECIAL MASTER HASTINGS: They are the same? It's another name for the same thing?

THE WITNESS: It is another name for the same cell.

SPECIAL MASTER HASTINGS: Did you say astrocells or astrocytes?

THE WITNESS: I said astrocytes, which really means a star-shaped cell. It's just descriptive. Astroglia indicates that they are part of the glial system, but those two terms are synonymous. I should stick to one of them.

Now, the most prevalent excitatory neurotransmitter is glutamate, and it is of course

essential to the effective functioning of the activities of the brain.

However, if there is an excessive glutamate it will stimulate too much. Some of the areas will simply fire too much, and that may blunt the specificity of their response. If it's really too much the glutamate itself can kill neurons.

There they are being what is called excitotoxic. In other words, they activate the neurons to the extent it kills them, and that's an important area of study in child neurology in many fields, not just in this one.

Now, one function of the astrocytes is to mop up excess glutamate, so at a synapse, which is the bridge between or the space between the end of one neuron and the beginning of another, glutamate is released into that little space. Some of it can scatter sideways, and astrocytes will mop it up.

In other words, astrocytes have a functional role in precluding overactivation, and if astrocytes are destroyed or lacking then overactivation may well occur. So now the next thing I need to address to show the relevance of this is what is the relevance of overactivation to autistic disorder.

I actually wrote an article more than 20

years ago -- it's my recollection it's in what I submitted -- suggesting that many of the symptoms of autism can be explained by an overactivation of arousal systems in the autistic person.

SPECIAL MASTER HASTINGS: What kind of system?

THE WITNESS: Arousal.

SPECIAL MASTER HASTINGS: Arousal. Okay.

THE WITNESS: But what it feels like to be overaroused is what it feels like to be anxious, what it feels like to be panicky, in suspense. It's that kind of a feeling.

In my opinion, much of what autistic individuals typically do is not a basic expression of an abnormality, but they're attempts to deal with their own overanxiety and arousal.

I've argued I think correctly that these repetitive movements have a calming effect, which is why the children do them and use them when they are overexcited, such as when a stranger comes into the house, for instance. This overarousal is the reason for what I take to be the overriding characteristic of the autistic state, which is an internal locus of attention.

What to me best describes overall what it's

like to be autistic is a preoccupation with one's own mind and one's own state and therefore a disassociation from what's happening outside so that autistic individuals are less occupied with, are less concerned with, take less care about what's going on, and only when circumstances force them do they turn their attention outward, but preferentially they're concerned with whatever is going on in their minds and their feelings.

What I suggested was that that is because they were constantly dealing with those feelings, which really was overriding all other interests in many cases. I might say that similar considerations may apply to some cases of schizophrenia, which certainly differ from autism in many ways, but have some commonalities as well.

Recently an important article was published by Rubenstein and Merzenich. Dr. Merzenich is a very highly respected, well-known neurophysiological investigator who has accomplished a lot of work in neuroplasticity.

They argue along the lines that I've described, but with a lot of neuroscience support for the concepts, and they in fact argue that the autistic state is a state of overexcitation, of this inhibited

excitation, and in one of the sections they discuss a possible role of glutamate in setting up that state.

I am relying to some extent on that article in the opinions that I've presented to the Court, so this outlines my theory of the mechanism of causation. To be totally clear, what I am providing here is what I take to be a medically reasonable mechanism of injury.

I'm not purporting that it is definitively known that this is the case. I'm not testifying to a scientific level of certainty, but to a level of probability.

BY MS. CHIN-CAPLAN:

Q Doctor, to summarize it's your opinion that the measles RNA which was recovered from Michelle's gut tissue more probably than not caused her autistic symptoms?

A Yes. RNA by itself doesn't cause anything. The measles virus, of which the RNA was discovered, is the agent that caused Michelle's symptoms.

Q Doctor, to briefly summarize, the manner in which the measles virus caused Michelle's symptoms was by what manner? Strike that.

Can you just summarize how this occurred?

A In synopsis, the measles vaccine virus in

this possibly quite unusual case was able to access the brain, was able to invade neurons or I say brain cells, astroglia, was able to stain those cells that it had invaded without killing them, but did evoke a vigorous response of the innate immune system against them, and the inflammation that resulted from that response disorganized critical circuits in her brain, interrupted communication between various areas in such a manner as to limit the type of mental operations that she was able to perform.

Actually to add a gloss to that, to expand that further, it's been observed by others and myself that autistic individuals have more problems with complex than with simple mental operations not just because the complex are more difficult. Disproportionately more problems.

One way of construing that is to say that when one deals with a complex issue one has to use many parts of the brain, and they have to intercommunicate appropriately and be coordinated to solve the puzzle, solve the problem, achieve the goal. When one is doing something simple, and this is shown in your imaging, only a small part of the brain is involved. When you see there is some activation, this has been clearly shown.

This communication between different parts of the brain would not be expected to handicap so much the simple operation, which is in one place, as the complex one where communication is of the essence in accomplishing the task.

This is the best I can do in describing the type of injury which, in my opinion, is most likely to impose on its victim the type of limitations that an autistic child has.

Q Doctor, there's been mention of the U.K. MMR litigation several times during this hearing. Is that true?

A It is true.

Q Were you a consultant to this U.K. litigation?

A Yes.

Q Could you describe the circumstances under which you became a consultant?

A Yes. I received a phone call from a solicitor.

MS. CHIN-CAPLAN: Special Master, it's 11:00. Should we just take a break before we start this section?

SPECIAL MASTER HASTINGS: Yes. I was going to ask you. You have a substantial amount more

direct?

MS. CHIN-CAPLAN: Yes.

SPECIAL MASTER HASTINGS: Okay. Let's take a 15 minute break at this point. Thank you.

(Whereupon, a short recess was taken.)

SPECIAL MASTER HASTINGS: All right. We're going to go back on the record here.

Ms. Chin-Caplan will continue her examination of Dr. Kinsbourne. Go ahead, Ms. Chin-Caplan.

MS. CHIN-CAPLAN: Thank you, Special Master.

BY MS. CHIN-CAPLAN:

Q I believe when we broke, Dr. Kinsbourne, you were asked how you got involved in the U.K. litigation.

A Yes. I received a phone call from the solicitor.

SPECIAL MASTER CAMPBELL-SMITH: You've got to speak up.

THE WITNESS: I'm sorry. I'm getting as close as I can to this thing.

I received a phone call -- no?

SPECIAL MASTER VOWELL: That's the court reporter's mic.

SPECIAL MASTER HASTINGS: We need both.

SPECIAL MASTER VOWELL: Both are important.

SPECIAL MASTER HASTINGS: Pull them both over.

THE WITNESS: Yes, I know she matters too. I'm sorry.

I received a telephone call from a solicitor from London who told me about a very extensive class action that was underway with respect to the possible influence of the MMR vaccine on the development of autism in a large number of children and also with respect to other complications of the MMR vaccine such as encephalitis, deafness, epilepsy.

He invited me to come as a consultant to evaluate the evidence from the point of view of pediatric neurology. It sounded interesting and turned out to be remarkably interesting and certainly the most extensive project that I've ever been in and ever will be in.

So I went over there and met a number of experts already engaged in this work, including some very distinguished people, and for about four years worked intensively on this project in a number of ways which I'm able to describe if asked.

BY MS. CHIN-CAPLAN:

Q Doctor, did you fly over to London?

A On numerous occasions I flew to London. We had meetings of the experts lasting two or three days. Very intensive, very interesting and involving many, many different disciplines and levels of analysis in the biomedical fields.

These meetings were obviously preceded by preparation. Every time one came back from a meeting one had more work to do in follow-up. Communication was continuous. My phone rang every day. My e-mail came every day. My wife was disturbed with me every day. It was a fascinating, disruptive thing that lasted four years.

What did it involve? The type of activities were, first of all, obviously review of files. There were something like 1,000 claimants. I didn't review all those files, but I reviewed well over 100, maybe 200.

Many of them were sent to me, to my home in Massachusetts. Others I reviewed when I was in one of my multiple visits to either London or Norwich, which was the other place in which the meetings occurred.

Q Doctor, just to stop, you indicated you reviewed hundreds of records?

A Yes. Yes.

Q Hundreds, you say?

A Yes.

Q Doctor, how many files did that involve? If you could compare it to the files in back of the Justice Department attorneys and compare that for the Court?

A Well, actually I would compare those to the apparent millions of research articles I got rather than to the -- greatly in excess of this. My house was occupied by this material.

Q You say greatly in excess?

A Greatly in excess.

Q Are you talking three times as much?

A Oh, easily. Easily.

Q Four times as much?

A Well, let me be more specific. At home I had about 100 files or case records, you know, typical case records like we have in this country.

I had I think it was 46 binders like this -- now, it may have been 44, but I think it was 46 -- with between 3,000 and 4,000 articles.

Q So, Doctor, you had you believe 46 binders?

A Yes.

Q I count the binders at the back of the Justice Department attorneys, and I see 15.

A Oh, that's nothing compared.

Q So you had at least three times as many files, patient files. Is that it?

A Yes. No, no. I'm talking now about the scientific articles.

Q The scientific articles constituted 47 volumes?

A Yes. Forty-six, I believe.

Q Forty-six volumes?

A Now, they didn't all come at once. I mean, this is over a course of four years, but yes.

Q How many patient files did you review?

A Well, I would say at home I reviewed about 100, and then I reviewed more -- I didn't count them -- when I was over in the U.K.

Q And when you reviewed the patient files were they as extensive as the files in back of the Justice Department attorneys?

A Not all of them, but many of them were.

Q So there were multiple volumes of medical records for these patients?

A Some patients had a single volume. Some had more. It varies, as it always does.

Q And you reviewed hundreds of claimants' medical records?

A Yes.

Q And you reviewed 46 volumes of scientific literature?

A Right.

Q But you had more involvement than that? Is that true?

A I had more?

Q You were more involved than just reviewing medical records and reviewing scientific literature?

A Well, it's a different matter. With the medical records one really wants more specific things about the children, the diagnosis. One wants to see what the syndrome is. One wants to determine and wants to both learn from them and also ultimately assist in the selection of the test cases, which is what it finally came to.

With the literature one has problems to solve. One refers back to the same article multiple times, depending on the questions asked. We did several series of intermediate reports. Not causation reports, but reports on possible mechanisms of the disease, and we would refer to articles.

We would share our writings with the defense, and inevitably the defense would fail to understand what we had said. In Britain they call this for the avoidance of doubt. They would ask many,

many questions, interrogatories, and we would answer them, and then they would ask questions about the answers we had given to the interrogatories, and we would answer those. That was an ongoing traffic that kept us going.

Of course, we would discuss among ourselves issues, and it was particularly my job more than that of most to know not only what was going on at my level of neurology, but what was going on at all the other levels because all the other levels are the infrastructure for my opinion so I need to be aware of them and here and there assist.

Q So you had to discuss the other disciplines that were involved in formulating an opinion. Was that it?

A Absolutely.

Q Doctor, the Respondent showed this to the Court.

MS. CHIN-CAPLAN: I'm afraid I don't have an exhibit number, Special Master.

SPECIAL MASTER HASTINGS: I believe that was Respondent's Trial Exhibit No. 6. It was marked as such.

BY MS. CHIN-CAPLAN:

Q Doctor, I'm going to show you Respondent's

Exhibit No. 6. I kept on counting and losing count of the number of people that were involved in this case. This was for the Plaintiff. Was that it?

A That's correct. Everybody listed consulted at various levels of intensity with respect to the Plaintiff's case.

Q How did they end up with so many experts?

A Well, there are so many disciplines involved, and there were multiple experts in each. I'm sure the defense had at least as many.

Actually, although I'm anticipating, when it comes to writing reports, which it finally came to, there was an exact match between the number of reports of Plaintiff and defense matched by the area of interest, so there would be an equal number of epidemiology experts, an equal number of immunology, equal number of gastroenterology. They would be matched. In the end I think it was something like 12 or 14 reports on each side

Q Did you say 40 report?

A No, no. We had all sorts of memos and intermediate reports, but the formal filing which occurred sometime in 2003 involved -- I may not remember it correctly -- maybe 14 or 16 reports from the defense, matching the same number of reports from

the Plaintiff.

Q But before those final reports came in the Defendant had approximately an equal number of experts as the Plaintiff did?

A I think that they probably had more, but I don't know that.

Q So if the Plaintiff had at least 40 or 50, the Defendant had approximately the same amount?

A Certainly at least, but we weren't privy to that information. It was only at the time of the reports that we found out, you know, who would be writing them, and then we received the materials. They of course waited until we had issued our reports.

Q Doctor, when you wrote your report were you required to consult with the 40 to 50 experts that I see on Respondent's Exhibit No. 6?

A Well, not required exactly. My involvement would vary from person to person, but I had an organizational role and interpersonal communication role.

If a new expert was joining the group, obviously the solicitor but I also would explain to them, you know, what the issues were and the way of proceeding, so in one way or another I certainly got to talk to most of these people and some of them very

much.

Q Doctor, when you put together your report did you consult with the other people on this Plaintiff's list of 40 to 50 experts?

A Well, mine had to be the last to be formulated. I was able to look at drafts of other people's, you know, and then when I had made my comments and also fully understood I would be finally ready to write my report.

Q So you reviewed the reports of all of the previous experts before you could draft yours?

A Yes.

Q Doctor, did you review the reports of the Defendant experts as well?

A No. They came afterwards.

Q They came afterwards?

A Yes.

Q Doctor, I'm going to ask you to take a look at this list. Doctor, who are these people?

A They're all different, you know, but one way of answering the question is if I could just read off the disciplines involved?

So we have neurology, we have neuropsychology, immunology, micropathology, peptide studies, epidemiology, histopathology, blood-brain

barrier, an excellent specialist in that area, genetics, gastroenterology, pathology, virology. I think those are the areas involved.

Q Doctor, the participants in this group of experts for the Plaintiff, were they highly recognized within their field?

A Oh, there were some very distinguished people. For example, the epidemiologists included Dr. Suissa and Dr. Shapiro, Dr. Montgomery, all excellent. Actually there was another very excellent doctor, Professor Spitzer, who was very well known. He unfortunately died.

In peptide studies, Dr. Castagnoli is a very recognized authority. Professor Menkes was there, pediatric neurology, from UCLA. He's the editor of the highest regarded textbook of child neurology. Professor Marchalonis, a brilliant immunologist, made important discoveries.

I don't know if you'd like me to go on, but they're interesting people.

Q Dr. Byers was there?

A Very interesting people. Dr. Byers.

Q And the molecular biology field? Was there an expert there? I notice the name of Dr. Tedder.

A That's right. In fact, Dr. Tedder, correct,

is considered one of the top virologists in the country.

Q And when you say the country --

A In the U.K. Yes.

Q Doctor, you indicated that you had to speak to most of these people before you could even draft your report?

A Yes. Another one, by the way, is Dr. Schoenfeld from Israel, who's very highly regarded in immunology. I enjoyed speaking with him.

SPECIAL MASTER HASTINGS: Doctor, I think your voice was dropping as you talked about that witness list. Please speak up.

THE WITNESS: Yes. I was unfortunately holding this paper between me and the microphone.

SPECIAL MASTER HASTINGS: Not a good idea.

BY MS. CHIN-CAPLAN:

Q Doctor, you indicated that you had to speak to most of these people before you could draft an opinion?

A Well, it's not that I had to, but it's that I wanted to because I needed to because I need to know what they were saying. You know, everybody has their own opinion, and I can't represent what other people say without having some contact.

Q So you had to incorporate the opinions of some of these people into your final report?

A Well, in modern medicine in complex issues there's no one discipline usually that's sufficient to address a difficult problem.

I mean, we all rely upon each other, and there's no good me making a statement which is not realistic in terms of somebody else's discipline because the diseases don't recognize these boundaries.

Q Doctor, you indicated that when the legal process began you had to answer questions. Was that it?

A Are you referring to the interrogatories?

Q Yes.

A Yes. There was a barrage of to and fro that came at regular intervals.

Q Doctor, these interrogatories, did they concern the individual people or did they concern science and medicine?

A They were about mostly science.

Q More science?

A Yes.

Q Doctor, when you answered your questions did you then send those answers over to the Defendant?

A Yes.

Q And what happened then?

A There asked more questions.

Q And you would answer those?

A To the best of my ability. Not just me. I mean, we all did this, you know, so it went on.

Q And that process was the same? The Plaintiff would submit it to the Defendant?

A Well, when they submitted some of their reports we tried to also ask questions because it seemed to be the thing to do, but we weren't as energetic about it as the other side was.

Q So not only did you have to compile your information; you had to review the other side's information?

A Yes.

Q And you indicated that there were expert meetings. Was that it?

A Oh, numerous. Regular, yes.

Q Were they across the ocean in the U.K.?

A Yes, they were. Well, actually a few times the barristers came over to the Boston area to meet with me, but mostly we met in the U.K.

Q Can you describe those meetings?

A Well, they were not unlike really most of the scientific meetings on a smaller scale.

We would meet in a hotel and have regular sessions starting say at 9:00 O'clock and break for lunch, you know, except we wouldn't finish until very late in the evening because people would be following and pursuing various lines of thought.

It was actually very well organized and very rewarding. There were formal presentations. There were little groups, discussion groups. There was spontaneous interaction, of course, between experts.

The lawyers actually had very little role in that. I mean, they were some lawyers present, but it was really a meeting of the experts.

Q And, Doctor, this formed part of your educational training?

A Oh, yes. I mean, immensely.

Q Doctor, when you were first retained did you provide an immediate opinion as to whether MMR could cause autism?

A Not at all.

Q How long did it take for you to arrive at that opinion?

A I would say about three and a half years.

Q Did you say three and a half years?

A Yes.

Q And did something happen that convinced you

that there was a relationship?

A Well, the piece of evidence which finally made me able to enter an opinion, in the context of all the previous evidence -- I mean, not just individually, but in that context -- was the actual retrieval of measles virus genomic material from the cerebrospinal fluid of three of the children in the Plaintiff group.

Q You say the recovery of measles virus genomic material in the CSF?

A Right. The same as we've been discussing in the gut lining, but actually found in the CSF.

Q And would that be an indication that it was present in the brain?

A Yes, it would.

Q Doctor, did this hearin, trial ever take place?

A No.

Q Do you know the reason why it did not take place?

A I know the reasons that were given. Well, the material reason was -- I have to explain the system there. The British Government pays for people to sue the British Government.

Q That's odd.

A And to sue its own public health service and

to sue the manufacturer, you know. It's a different philosophy.

You see, class actions as such in the British system are not practical because the firms don't have the financial resources to mount major efforts of the kind that we're describing, so there is a commission currently called the Legal Services Commission. It had a slightly different name when we started.

Legal Services Commission grants funds to Plaintiffs who otherwise wouldn't be able to proceed for lack of funds on issues of major importance. Now, as I understand the criterion, they will grant funds if they believe that the action has a more than 50 percent probability of success. They will withdraw it if they change that belief.

Now, the Legal Services Commission did in fact withdraw funding some months after we had exchanged reports and after the CSF finding, and as I recall it it's my recollection -- I read this document a long time ago, but as I recall it -- there were two kinds of reasons given.

One reason was that in the evaluation of the state of the action, and this is based on reports rendered by the barristers on both sides periodically

as to the state of the action to the Services Commission. They determined made separate determinations for the enterocolitis and the autism. They determined that the enterocolitis action had a more than 50 percent chance of success, but the autism had a less than 50 percent chance of success.

They argued as follows: We have now spent 15 million pounds. A trial date had already been fixed. If we went to trial it would cost us another nine million. To proceed on the issue of enterocolitis at that level of expense was not justified in their opinion, so that was the reason for suspending funding.

They had another reason as well. That reason was to do with the fact that in developing the evidence of the case it wasn't possible simply to rely on the evidence already present in the year 2000. One had to make new findings, which one could call research, though obviously they weren't formal research efforts, but such as the finding of the measles virus material in the CSF.

That finding wasn't available when the action began, and they suddenly discovered that they'd been funding research, which apparently they hadn't realized for the five years in which they'd been

funding research, and they said that really it should be the Medical Research Council that should fund research.

So those were the two reasons given. At any rate, it never came to a decision. The case was not heard. The case was not dismissed. The case ran out of cash.

Q So if I understand correctly, the Legal Services Corporation didn't think that they should spend nine million more pounds to determine whether the children should receive compensation for their GI problems?

A Correct.

Q And they also made the determination that they were funding research for the past five years, and they were no longer going to fund research because it was the responsibility of the General Medical Council to fund research?

A No. Sorry. Correct except not the General Medical Council. That's a licensing body of the Medical Research Council, MRC, which is the equivalent of our NIH.

They said that there should have been regular applications for funding for research projects, and maybe there should, but nothing had

changed, you know. The way that we'd been proceeding was the same all along.

Q So the funding for the research was discontinued?

A Yes. It was discontinued in September of 2003.

Q And that was the reason the case was dismissed?

A Yes, that's right.

Q Doctor, one last question. Are you antivaccine?

A Oh, no. I think vaccination programs are essential, critically important and to be supported by all means. In fact, all seven of my children have been fully vaccinated, including my three preschoolers, and they all did fine.

MS. CHIN-CAPLAN: Thank you, Doctor. I have no further questions.

SPECIAL MASTER HASTINGS: All right. Mr. Matanoski, do you have any questions for this witness?

MR. MATANOSKI: I do, sir, but I almost think that it might be better to take the lunch break now because I will have probably some extended cross-examination rather than going for a little while and then starting again.

SPECIAL MASTER HASTINGS: Do you have any idea what timeframe? I'm not sure why you don't want to do some now and some after lunch. It's a bit early for lunch, I think.

MR. MATANOSKI: I'll probably be going on. I know that my last two lasted about two hours.

SPECIAL MASTER HASTINGS: Right.

MR. MATANOSKI: I'll probably go on about that long.

We could start. Conceptually the presentation of cross-examination would make better sense, at least the beginning of the cross-examination would make better sense, if it was heard as one piece rather than broken up.

SPECIAL MASTER HASTINGS: All right. Let's take our one-hour lunch break at this point.

MR. MATANOSKI: Thank you, sir.

SPECIAL MASTER HASTINGS: We'll start again at I have 11:46. We'll start about 12:45.

(Whereupon, at 11:46 a.m., the hearing in the above-entitled matter was recessed, to reconvene this same day, June 15, 2007, at 12:45 p.m.)

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

(12:50 p.m.)

SPECIAL MASTER HASTINGS: Good afternoon. For those who are listening in, we're back to start the afternoon's activities.

Dr. Kinsbourne is still in the witness chair, and the government was going to have some questions for him at this point.

Whereupon,

MARCEL KINSBOURNE

having been previously duly sworn, was recalled as a witness herein and was examined and testified further as follows:

SPECIAL MASTER HASTINGS: Mr. Matanoski?

MR. MATANOSKI: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. MATANOSKI:

Q Good afternoon, Dr. Kinsbourne.

A Good afternoon, sir.

Q Dr. Kinsbourne, you just provided an opinion, and you said it was to a degree of probability.

A Of medical probability. A degree of reasonable medical probability.

Q Reasonable medical probability. Can you

quantify what that means in terms of the level of confidence?

A Yes. The standard that I am instructed prevails in these proceedings, which is a more likely than not or about 50 percent standard.

Q I'm about to go through your chain of causation in this case, and at each step of the way I'd like you to state for me what your level of confidence is in the matter that you had just testified to, whether it is at that standard, about 50 percent; whether it's greater than that, let's say you're fairly confident or very confident and it rises above to say 60 percent.

Just give us a sense of when it hovers right at that breakpoint of 50 percent and when it's greater than that.

A I don't actually attach medical probabilities to steps in an argument. I only attach --

Q I'm having trouble hearing you.

A I don't attach probability ratings to the steps of an argument because I look at the total clinical picture before I make a diagnosis, so it would be a meaningless exercise to do that.

Now, of course, that doesn't mean I won't do

it if you ask me to, but I warn you that whatever the probabilities are if you take these steps in isolation it's really unhelpful to how it looks when those steps are taken in combination because in a clinical picture the various features of a case interact with each other, so cutting it up into pieces is medically irrelevant.

Having said this, I'll be happy to do whatever you tell me.

Q I'm sorry. Cutting it up into pieces? You have a sequence here that you've just gone through on direct --

A Yes.

Q -- where you explained the whole sequence --

A Correct.

Q -- that leads you to a conclusion --

A Correct.

Q -- that MMR vaccine causes autistic spectrum disorder.

A Right.

Q We're going to go through that chain. At each point I just want to know is this at the breakpoint or is this particular part of your theory fairly well accepted.

A And I agree to do that, sir. I have no

problem.

Q Thank you.

A I was just attempting to caution about how that might reflect on my ultimate opinion.

Q Okay. So when we go through it you might actually change your ultimate opinion?

A No. Anything could happen, of course. I mean, we might have a Perry Mason moment.

Q I seriously doubt that, sir. Let's start with one of the theories that has been laid out here, but I didn't hear you speak on it this morning, and that is the role of thimerosal in the causation chain here.

A For that role I rely on Dr. Aposhian. I have no independent opinion on it.

Q Okay. So you don't know what role it plays?

A No. I'm saying I rely on Dr. Aposhian for that proposition. I'm not a toxicologist, and I haven't reviewed this case with respect to formulating an opinion on that particular step.

Q So you offer no opinion there?

A Correct.

Q And the next step seems to me is the receipt of measles, mumps and rubella vaccine. Now, at that point when the child receives measles, mumps and

rubella vaccine what does the virus do, the measles virus, which is the one we're interested in?

A What does the measles virus do?

Q Right, after the child has received the vaccine.

A Well, initially it's in the tissues.

Q How does it get into the tissues?

A Through the needle.

Q Okay.

A And then bit-by-bit it's carried off by the circulation, local circulation, into the systemic circulation.

SPECIAL MASTER HASTINGS: Doctor, for some reason I'm not hearing you as well as I did this morning. I'm sure it's not just because it's cross-examination.

THE WITNESS: Yes.

SPECIAL MASTER HASTINGS: Do the best you can.

MR. SHOEMAKER: Could we use this wireless microphone, the one that Sylvia was using this morning? I think it's worth a try.

SPECIAL MASTER HASTINGS: Okay. Are you qualified to set it up, Mr. Shoemaker?

MR. SHOEMAKER: No. And I'll take full

responsibility if I don't do it right. Is there any way we can test this?

THE WITNESS: Testing.

SPECIAL MASTER HASTINGS: All right.

THE WITNESS: Thank you.

BY MR. MATANOSKI:

Q So you're at the point where the virus has now entered the body. It's gotten into the local system, and then you said it gets into the systemic system.

A It is bit-by-bit carried away into the circulation to set up the viremia.

Q Okay. So at the point of injection you have it in the local area where it was injected, and then bit-by-bit it's carried into the bloodstream? Is that what's happening?

A Yes.

Q Okay. How long does it take before that happens?

A I'm not a virologist. I don't know that.

Q And after it enters the bloodstream what happens next?

A It circulates, and primarily it enters the lymph glands and may actually enter those before it enters the bloodstream through the lymphatic system.

In the lymph glands the major immune attack on the virus is launched.

Q So the body actually starts trying to fight it when it gets into the lymph glands?

A Right.

Q Okay. Then what happens? How long does it take after the injection before it gets into the lymph glands?

A I'm not a virologist. I don't know that.

Q After it gets into the lymph glands and the body immune system starts fighting it, what happens next?

A Well, on the one hand the virus is circulating in the circulation. That's the viremia. On the other hand it's being neutralized by the immune attack, and the immune attack will be both humoral and cellular so the virus will be attacked both when it's free and when it's in cells. In conjunction, the two systems will in almost every case eliminate the virus.

Q Now, when the immune system starts to operate, when it's gotten into the lymph glands and the immune system starts to operate, would we see any symptoms?

A Well, we will see, for example, the rash which would be generated by antibody-antigen

complexes.

In other words, the rash itself is a manifestation of an interaction of the virus with the immune defense against it, and we will see fever through the cytokines released by the effects of the virus.

Q And this is when the virus first enters the lymph glands?

A I can't tell you the time. There is some immune reaction already locally, which we can tell of course by the swelling that may sometimes occur, the local inflammation, swelling, redness, pain.

That would be by the innate immune system that is the early responder, and then in the lymph glands you would also get the adaptive immune system formulating a more specific attack on the particular antigen in this particular virus. Timeframes I can't give you.

Q Okay. So you don't know when exactly that would occur.

You talked about the immune system responding. If we were to do some testing when a person could see whether that happens, what would we look for to see whether they had launched an immune system response?

A Well, we would in theory need to look at both arms of the immune system, of the adaptive immune system, namely the humoral and the cellular. The humoral is what is customarily tested in terms of the antibody formation against the virus, although actually it is the less important part of the response, but easier to measure.

The more important defense is the cellular because it's a virus into cells, and it is possible, but expensive, to measure cellular immunity, and it's not a process that I am personally expert in.

Q How confident are you up to this point? How confident are you in what you just stated?

A I am fairly confident both in what I know and what I don't know.

Q Yes, and I know you've been very careful to tell us what you didn't know.

From what you've stated that you do know, is that at the 50 percent level of confidence, or is that much higher than that?

A I would say it's higher.

Q Now, you said that the standard measure that you would take to see whether the body mounted an immune response would be to test the humoral part or the antibody response. Is that right?

A Yes.

Q And what would you expect to see if the body mounted a successful attack on the measles virus?

A You would expect to see the presence at what I take to be satisfactory levels of antimeasles antibody.

Q And in terms of that part of your opinion, what level of confidence do you hold to that?

A I'm pretty confident of that.

Q Now, what does the virus do at this point?

A At which point?

Q Where it's now elicited a humoral response, an antibody response, and the other arm, the cell-mediated response.

Let me just step back. It's initiated the immune response, and the viremia has begun.

A Right. You're asking me what it does after the viremia?

Q Actually, I'll strike that question. What in Michelle Cedillo's case have you looked at that's pertinent to what I've said so far?

A The fever.

Q The fever. Was there something else?

A There was. There was a faint rash also reported, yes.

Q And did she have a test for antibodies as well?

A No, she did not.

Q Okay. She had that when?

A Oh, much later when Dr. Gupta investigated her. I don't know if she had it any other time, but she had it then.

Q Okay. And do you recall what that test showed?

A No.

Q Do you know whether she had a measles-mumps-rubella vaccine after the one that we're talking about in 1995?

A No. I mean, she didn't.

Q She didn't?

A No.

Q And you don't believe that she was exposed to wild measles virus. Is that right?

A It's not the matter of my belief. I didn't find any evidence in the records that she had been.

Q Now we have the viremia. Where does the virus go next after the viremia or during the viremia?

MS. CHIN-CAPLAN: Special Master, these are all virology questions. Dr. Kinsbourne is a neurologist.

We had Dr. Kennedy here. It seems to me that Mr. Matanoski could have questioned Dr. Kennedy about all this information.

SPECIAL MASTER HASTINGS: I don't think Mr. Matanoski is looking for information for its own sake. He's trying to test Dr. Kinsbourne's understanding, and since he's the one that presents the ultimate opinion I'll give him some play here to ask a few questions in this regard.

MR. MATANOSKI: Thank you, sir.

BY MR. MATANOSKI:

Q Do you need me to repeat my question?

A Yes, please.

Q After the viremia begins, where does the virus go next?

A The virus is cleared from the system and disappears.

Q And when it doesn't, as is the postulate this case, where does it go next?

A When it doesn't it would be likely to settle in macrophages, maybe in dendritic cells and possibly in other places of which I'm not aware.

SPECIAL MASTER HASTINGS: Before we go on, Doctor, I'm hoping that that microphone we just clipped to you is helping the people at home.

Unfortunately, that microphone is for the phone conferencing.

That big microphone, if you could pull that a little closer to you? That would help here in the courtroom.

THE WITNESS: Yes, sir.

SPECIAL MASTER HASTINGS: Just a little closer to you on the stand. Great.

BY MR. MATANOSKI:

Q I'm sorry, Doctor. You said that what happened? I lost you.

A Well, the virus would settle in macrophages and it would settle in dendritic cells, and there may be reservoirs of it established elsewhere such as the bone marrow, but I don't know that for a fact.

Q And how long does it take to do that?

A I have no idea.

Q Do you know how it does it? How does the virus get into the macrophages? Do you know?

A The virus gets into a cell by attaching with that sequence, the genetic sequence that Dr. Kennedy explained.

Q And would we see any symptoms externally, clinical symptoms, of this happening?

A Not to my knowledge.

Q Now it still isn't resident in any organ other than blood at this point, or is it resident in some organs?

A Well, it's resident in lymphoid tissue and maybe elsewhere, but I don't know that.

Q Is there any diagnostic test we could do at that point to find the presence of measles virus?

A I would imagine that one could biopsy a lymph node and test for the virus.

Q And if it's in the macrophages could you test the blood?

A Yes.

Q And if it's circulating in the blood you could test the blood. Is that right?

A I would think so.

Q Now, from there in the course of your theory it seems that it needs to get to the gut. How does it do that?

A It would get to the gut by the circulation, by the blood circulation, and then settle in the lymphoid tissue in the gut, in the gut lining.

Q And how does it get into the lymphoid tissue in the gut lining? Is it the same process, or is it a different process that we were talking about for --

A I don't know whether it's the same or

different process.

Q I'm sorry?

A I don't know whether it's the same or a different process.

Q How long would it take from the time period that you got MMR to it being in the gut?

A I don't know.

Q What symptoms would we expect to see at the time that the measles virus entered the gut?

A That is a question for a gastroenterologist. I'm not the right person to ask about the time course of symptoms following viral invasion of the gut lining.

Q Do you know, and if you don't that's a perfectly fine answer if you don't know the answer to this. Do you know what kind of diagnostic testing we would do to test whether it would be in the gut?

A Well, I'm sure I don't know it as comprehensively as somebody who is in that discipline.

Q In which discipline?

A Gastroenterology. You would, for instance, determine by scope whether there's inflammation, and if there's inflammation you could take a biopsy and analyze the sample.

Q Doctor, from what you know of measles virus,

would it preferentially attack the gut or find its way

to the gut, or would it find its way to other places as well?

A It's described as preferentially being enterotropic, as I mentioned this morning.

Q In any other places in the body?

A I've already mentioned the lymphatic system. If it gets access to the nervous system it will go there, but it may not get access.

Q Now, you told me you didn't know exactly what kind of gut symptoms we should expect.

A Well, I do know that one would get diarrhea. What I don't know is the timeframe.

Q Is that specific to measles virus, diarrhea?

A No. There are some other causes of diarrhea.

Q Is it described that measles virus, the typical response to it is diarrhea?

A I don't know whether it's typical. I have seen descriptions of diarrhea following measles infections, yes.

Q You mentioned that it also is preferential to lymphatic tissue. Is that right?

A Yes.

Q What symptoms would we expect to see when it

//

was in the lymphatic tissue?

A Well, if a child has measles -- in other words, if it's a measles infection that you're talking about, which I'm not clear about -- then the lymph glands could be swollen.

Q And I am talking about measles virus infection.

A You are? I see.

Q So these preferential areas are the lymph glands and the gut, and if it's hitting these preferential areas you're not sure what symptoms other than diarrhea for the gut, but you'd expect to see swollen lymph glands. Is that right?

A And if we're talking about measles you would obviously get the skin involved with a rash, and you'd get spots in the mucosa inside the mouth, and you would get a measly appearance of the child with conjunctivitis and runny nose. At least when I was young that was a familiar situation.

Q And when the symptoms went away what would that indicate to you, the symptoms of swollen glands or rash disappearing?

A Well, I would suppose that the immune system had disposed of the virus effectively, although it may take quite a while for the lymph glands to go down

actually.

Q And is this generally well known in terms of the course of that viral entity?

A I think the rather simplistic description I've given is well known. I'm sure there's much more known.

Q I'm sorry?

A I'm sure there's much more known by a virologist than that.

Q Now, if the postulate that we have was still resident in the gut, would you expect it to be resident in other areas of the body at the same time?

A I don't know.

Q Would you please describe how it would get from the gut to the brain? This is the measles virus.

A If the measles virus were stored, as it were, in the gut lining and latent there then it would get to the brain through the circulation of the blood.

Q If the measles virus was persisting in the gut would the virus continue to circulate through the body in the blood?

A Sometimes and sometimes not.

Q Okay. How often does it do that? How often does it circulate in the body if it was in the gut?

A I don't know. I don't know such a thing.

No.

Q You don't know what the probabilities are that it would not be in the circulating blood?

A We're talking about a normal person? No, I don't know.

Q Let's talk about someone who we postulate has an immune deficiency as in this case. How would it occur in that instance?

A It is likely --

MS. CHIN-CAPLAN: Special Master, these are all virology questions. I haven't heard a neurological question yet.

MR. MATANOSKI: We're getting to neurology, but I did hear this morning offered testimony in the area of virology, and Dr. Kinsbourne is free to say he does not know on any question I ask.

SPECIAL MASTER HASTINGS: I'll let him continue.

MR. MATANOSKI: Thank you.

THE WITNESS: I'm sorry. Could you say it again?

BY MR. MATANOSKI:

Q Doctor, in the person that we're talking about who has an immune dysfunction as in this case, if the virus was in the gut how is it getting to the

brain?

A Well, by the circulation of the blood.

Q In that same person that you're postulating that it's persisting, if it's persisting in the gut would it continue to circulate in the blood continuously?

A Not necessarily, no.

Q Is the virus going to be only resident in the gut and not having it circulate in the blood at all?

A It's a possibility.

Q Is it more likely than not that that would be the case if it was resident in the case?

MS. CHIN-CAPLAN: Now we have a gastroenterology question. The experts were here.

SPECIAL MASTER HASTINGS: Ms. Chin-Caplan, as I understand your case, this is the only medical doctor who puts it all together, who gives the ultimate opinion.

I don't think either the immunologist or the gastroenterologist gave the ultimate opinion of causation, so I think it's appropriate. I think these questions are appropriate for the physician who's giving the ultimate opinion on causation for you.

To the extent he doesn't know the answer, he

obviously feels free to state when he doesn't.

BY MR. MATANOSKI:

Q Doctor, back to you.

A Thank you. Again, if you'll be so kind?

Q We'll start back with the gut thing. In the postulate you have, if the measles virus is resident and persisting in the gut how is it getting to the brain?

A By the circulation of the blood.

Q Can it exist in the gut alone without it entering the bloodstream to get to the brain?

A It couldn't get to the brain without getting into the bloodstream.

Q If it's persisting in the gut, would it continue to be in the circulating blood?

A I would imagine that sometimes it would and sometimes it wouldn't.

Q How often would it not be in the circulating blood?

A I don't know.

Q So this is your guess that it sometimes might not?

A It seems biologically reasonable for any substance in lymph glands at times to percolate in amounts -- tiny, small, medium, large or enormous --

into the blood and other times not to do that.

That would be on general principles, but how often? If anybody knows the answer to that question, which I doubt, I certainly am not the person.

Q I don't want to ask a question that's already been answered.

I believe you said you didn't know how long between the receipt of measles virus vaccine would it be before the virus entered the gut. Is that correct?

A Yes. I don't know that.

Q Do you know how long it would take before the virus went from the gut to the brain?

A I know that it can take months or years for the virus to reach the brain from its source, but I don't know specifically how that's modified if the gut is the source.

Q So you don't know how long it would take if the gut was the source of the virus? You don't know how long it would take before it would enter the brain. Is that right?

A I imagine it would be very variable. I don't know that there are time limits on this.

Q Now, for the part of the theory that you have from getting to MMR into the gut, what studies do you rely on?

A For my knowledge that the measles virus gets into the gut it is a property of the measles virus to be enterotropic.

Q No. For your proposition that measles-mumps-rubella vaccine, the measles component of it, would enter the gut, what studies do you rely upon?

A No particular studies. I rely upon the opinion of the virologist, of the appropriate specialist. I have not studied that independently.

SPECIAL MASTER HASTINGS: Let me stop again. Again, Doctor, I hate to repeat this. I had no trouble hearing you this morning, and I'm having a hard time now.

I don't know if it's something I ate, but if you could speak up as best you can?

SPECIAL MASTER VOWELL: Perhaps if he pulls his chair forward?

I notice it's sort of fading back, Doctor. That might help get you a little bit closer to the mic.

THE WITNESS: To the extent my body permits.

SPECIAL MASTER HASTINGS: We appreciate it. Thank you.

THE WITNESS: Okay.

SPECIAL MASTER VOWELL: That's much better.

THE WITNESS: I hope so.

SPECIAL MASTER HASTINGS: We want to hear what you have to say.

THE WITNESS: Yes.

SPECIAL MASTER HASTINGS: Mr Matanoski, go ahead.

MR. MATANOSKI: Thank you.

BY MR. MATANOSKI:

Q Up to this point when I had asked you questions about how confident you are you ventured an opinion. Now, how confident are you in the notion that the vaccine, the measles component, would enter the gut?

A See, my difficulty is with the formulation of the question. Would enter the gut in every child? In some children? Nothing happens always.

Q I'm sorry. Let's deal with this case then. In this case.

A How confident?

Q How confident are you in this case that it would enter the gut?

A Okay. I have a degree of confidence about 50 percent in this case.

Q Now, when the virus gets to the brain, how does it enter the brain?

A It would enter the brain through the lining of the blood vessels otherwise known as the blood-brain barrier.

Q And how does it do that?

A It would typically be transported by macrophages. In other words, it would be inside the macrophage which then can permeate the blood-brain barrier.

Q And once the macrophages enter the brain -- let me take a step back. Would you see any clinical symptoms of that happening?

A I can't locate any such symptoms.

Q In the factual context of this case how long would it take between the receipt of MMR with the measles vaccine component before the macrophages would bring measles virus into the brain?

A In the context of this case my opinion is that it took seven days, but as a general principle I can't give you an answer.

Q You just said it would happen in seven days. Then you know or have a guess as to how long it should take as a pathologic process or as a physiologic process?

A I have no opinion as to whether it should take longer. I don't believe that it should take

longer.

Q I'm trying to find out why seven days is okay in this --

A No. You asked in the context of this case.

Q I understand that seven days is good in this case, but that has to be based on some body of knowledge about how long it should take in order to be appropriate in this case. What is that body of knowledge or what is that range of how long it should take if you know?

A I have not reviewed virologic literature on that process, so I don't know.

Q Okay. Once it's in the brain what happens next? What does the virus do next?

A The virus will settle inside cells.

Q What kind of cells?

A They could be neurons, they could be astroglia.

Q Any other kind?

A They could be microglia, they could be a combination.

Q Does measles virus preferentially select certain cells?

A I believe that it is most apt to be in astroglia.

Q Because that's preferentially selected by measles virus?

A For whatever reason I think that's where it's most commonly found. I mean, I don't know, and there's a reason for saying it. I'm not sure that the measles virus makes the decision or maybe the cell makes the decision. The microglia has a phagocytic function and would actually encompass the virus. On the other hand, the virus would attach itself to another brain cell which had no particular interest in it.

Q Okay. So it's your belief then that it's actually the cells themselves that are better attracted to these particular cells? The astroglia are attracted to the measles virus?

A I'm not sure I said it like that, but let me say it again. A phagocyte is a cell that's specialized to encompass foreign material, and the virus is foreign material and the microglia has a phagocytic function, so one would expect it to take up virus particles. On the other hand, the virus has certainly entered cells that are not phagocytes, and they do that by the mechanism Dr. Kennedy describes, by attaching themselves to the cell membrane and entering the cell.

That could happen either with neurons or with astrocytes.

Q After it enters the astroglia what happens?

A It stays there. Now, depending on the circumstances it either destroys the cells whereupon it also destroys itself, that's calls a cytolytic process, or it remains persistent in the cell where the cell continues to be intact, which is a non-cytolytic process. Both occur.

Q Both occur simultaneously?

A No. Well, I don't know. Maybe they do, but there are circumstances where you have your cells being destroyed and others where you don't. It's not an essential characteristic of all measles virus infections of the brain that there be cytolosis, but it certainly can occur. But there are other circumstances where the measles virus stays inside the cell, and the cell maintains its integrity but not necessarily its function.

Q Okay. So there are variable results? It can do some cytolytic damage and it may not do some cytolytic damage?

A Correct.

Q How do you measure whether it's going to do cytolytic damage or not?

A Well, if you have the opportunity at the right time then microscopically you can see whether there is necrosis of cells, whether the cells are in fact process of dying, or subsequently you can see whether the number of the cells is depleted so that you can assume that some were killed.

Q Do you know of any time when measles virus entered the brain and it was non-cytolytic? It had no cytolytic activity at all?

A I'm not aware of a question like no cytolytic activity all. I don't know where that's the case.

Q So you don't know if it can exist without doing some cytolytic damage?

A Some is such a minimal. I mean, anything can happen.

Q Should I direct this question to a virologist?

A Well, it's certainly up to you, but it might be appropriate.

Q Would it be more appropriate to direct this question to a virologist?

A Yes. I think that at the infinite level of the infection between the virus and the cell regardless of the system of the body this is more in

the domain of a virologist.

Q What studies are you relying on for your description of what the measles virus will do on a cellular level in the brain?

A Do you mean what do I rely upon in the proposition that the measles virus enters the cells?

Q You just gave us a description of what the measles virus would do on a cellular level in the brain. I'm asking for what studies you're thinking of or support for that proposition.

A I've read about this. I don't think that what I said was cutting edge science, so I don't remember any recent specific article. I mentioned Dr. Oldstone's caution that the virus can persist without cytolosis. Obviously the virus can also cause cytolosis. I mean, I didn't know that was controversial.

Q Okay. But you don't know what the relative probabilities are of it being non-cytolytic?

A No, I don't.

Q Now, after its entered the cells in the brain, what happens next?

A The innate immune system of the brain would launch an immune attack on the cell with the virus. In other words, the presence of the virus antigen

would activate the microglia, and the microglia would produce proinflammatory cytokines and the proinflammatory cytokines would generate inflammation.

Q And this is a proper response by the body to the entrance of a virus. Is that right?

A Yes, it is.

Q Now, can you get us from what the virus is doing in the brain to how the virus is creating autistic spectrum disorder? Actually, let me take a step back. How long would it take after the virus entered the brain before the innate immune system would begin to kick in?

A The innate immune system typically has a short latency, so should react quickly.

Q So after the innate immune system begins what's the next step in the process?

A Well, inflammation is created.

Q I'm sorry?

A Inflammation.

Q Inflammation is the next step?

A After the innate, when the innate immune system responds, it responds by causing inflammation.

Q And the inflammation is for which purpose?

A Well, it's for the same purpose as when you scratch yourself on the arm. It is for removing the

invader or the substance that has the characteristics

of an invader.

Q It's a proper immune response?

A Correct.

Q Now, what's the next step in the process that leads us to autistic spectrum disorder?

A The process that we've described so far as mentioned involves astrocytes. The astrocytes are inactivated or killed, depleted in number, or weakened in their function and the consequences in the particular mechanism of injury that I offered this morning are that a glutamate excess may result. I could go over those further steps again, but they would be the same as I testified this morning.

Q Taking a step back, the innate immune response to measles virus in the brain, how confident are you in that occurring?

A I'm confident. About 50 percent.

Q Only about 50 percent?

A I said about.

Q I'm sorry?

A About 50 percent.

Q You're not much above the 50 percent level that there's going to be an innate immune response?

A Well, let me be more specific because this is a really contrived exercise. I know about this

from the Vargas work, and the Vargas work I think is of high quality, and the findings are explicit and they are well-regarded. However, they are a single study so I'm not going to be 100 percent confident on anything on a single study, but it gives me a sufficient basis for my opinion.

Q So you believe that it's pretty well-established in your view that there be an innate immune response to a virus in the brain. Is that right?

A Actually, I'm sorry. I was talking about the autistic children.

Q No, no, no. I'm sorry, Doctor. I didn't mean to confuse you. I'm taking you back a step to the innate immune response.

A Okay. The question of whether the innate immune system responds in this fashion in the brain of normally functioning children is not one that I have considered, and therefore I can't offer an opinion on it.

Q I'm sorry. You can't offer an opinion on? Could you repeat your last answer? I just had trouble hearing you.

A Yeah. Should the measles virus enter the brain under normal circumstances, which I believe it

is a very uncommon event, then all arms of the immune system represented in the brain will presumably react, innate and adaptive. I have no reason to doubt that.

Q You feel fairly confident in that happening?

A Yes.

Q Okay. The next step that you were describing was getting us to how we have autistic spectrum disorder.

A Right, and the mechanism of injury which I offered, which I present as medically reasonable but I do not present as scientifically proven, involves the pesticides, which as we have discussed can be inactivated or destroyed by the virus, and involves a known function of the astrocytes, which is not a controversial but an accepted function, with respect to the control of the level of glutamate, which is an excitatory neurotransmitter.

I explained this morning in a simple way what the astrocytes normally contribute to the control of glutamate levels and the consequence of that control lacking being that the glutamates would be produced and persist in the brain in excessive amounts.

Q Okay. So the former proposition that glutamates would be present is fairly well-

established?

A That astrocytes are involved in glutamate control is supported by current literature. Yes.

Q How confident are you in that happening?

A I've read multiple publications making that point. I'm not aware of seeing controversy about it. There is hardly anything in your science about which isn't some controversy so I can't give you guarantees.

Q Okay. But you're pretty confident in that one?

A Yes.

Q This particular part of the theory about astrocytes, their role in controlling glutamates, is that a new theory?

A I don't know how new it is. I suspect the finding is recent, but I couldn't tell you exactly.

Q So you're not that familiar with the literature on that particular --

A I haven't made that issue a particular focus of my study. It is something that I'm aware of in my knowledge of brain function.

Q How long does it take from the time the virus enters the brain before this process would begin?

A Before it?

Q Before this process would begin.

A I have no information on that.

Q Has it ever been studied?

A I don't even know that.

Q The next step in the process, could you describe that, please? What happens next?

A The shift in the balance between excitatory and inhibitory influences in the brain, which as I mentioned this morning is always a fluctuating factor in brain function, would be skewed to the excitatory extreme. That would affect the communication between neurons in different parts of the brain in a particular manner.

In order for the brain to do what it does, which is form specific patterns of activation which correspond to specific experiences in the outside world, specific memories in the inside world, specific emotions, they correspond to particular considerations of neuronal activation. It's like peaks and balances. Just think of mountainscapes, only the mountains are levels of activation.

Then you would have a conceptual model of the pattern of brain activation, which ideally a million years from now we'll be able to specify from that pattern what a person is experiencing.

Obviously, we can't do that. Now, the point that I'm addressing isn't a particular pattern representing a particular experience, but the ability of the brain to discriminate between different experiences by making differential patterns.

For it to do that in a refined way, it needs two elements. It needs the activation to cause the amplitude and it needs inhibition to model one, to circumscribe them so they don't overflow, because otherwise it's like ink running. The pattern would become less specific and the behavior would become less refined and more crude.

So what I'm saying is that the precision with which a person can think is more a function of the ability to inhibit specifically just like the precision of a sculpture is a function of the ability of the sculptor to decide exactly what to remove from the medium. Now, if the inhibitory aspect of forming brain states is overwhelmed by the activation, one is going to get fewer differential brain states available, and under ones that makes fewer distinctions. That's one point. In other words, as I was saying this morning, only simpler issues can be addressed would be the correspondent. It would be what would correspond to this particular perspective.

Q My question was a little simpler than that. I'm fine with going on, sir, but it was a little simpler than that, but go ahead.

A I'm sorry. I do want to respond to what you're asking me. Am I doing all right?

Q Go right ahead if you have more to say.

A There's always more. The last point to make before I let you reenter this conversation is that it is particularly hard for a brain to have a specific distribution of patterns in different parts of it, and in the cruder brain they would collapse into fewer simpler aggregations. This I think happens in the immature brain, in the damaged brain, in the demented brain.

In order to have very specific patterns involving different modes of thinking, for example, sensation, movement, better memory, you have to hold these activations apart so they each contribute to the refined mental state.

If you have over activation then you're unable to form these refined distributive patterns and you are thrown back on the more simplistic local selective patterns such as attending to just one thing or one part of a thing, or obsessing in one's mind with one thought over, and over and over, or engaging

in a particular activity again, and again and again as opposed to flexibly moving from one thought to another, one perception to another, one memory to another, one activity to another, as is required by the contingencies of normal living.

Okay. That's an answer, but please proceed.

Q Thank you, sir. How long does it take before this disregulation and the excitatory process begin?

A I don't know.

Q What studies do you rely on for this result, the excitatory disregulation?

A As I mentioned this morning the construct of a bias in the excitation inhibition ratio or balance is formulated by the article of Rubenstein and Merzenich which I have included in my bibliography.

Q Is that your best support for this proposition?

A Yes.

Q How confident are you that this is what's happening? Is that the 50 percent threshold or is it greater?

A It's about 50 percent, but it certainly requires more studying.

Q What's the measles virus doing meanwhile in

the brain?

A As far as I know, it's sitting there.

Q Which link in your chain of causation are you least confident in?

A For me to answer this accurately, could you give me the particular links that you want me to compare?

Q Take your whole chain that we just went through. Which link in it are you least confident in?

A I'm taking my time reviewing my chain, okay?

Q Take as much time as you want, Doctor.

A Thank you. I think it's a question of how to define what is the link. My opinion renders that more likely than not the measles virus is the cause of the encephalopathic process, results in to an autistic behavior is based on arguments such as the measles virus is neurotropic, it's neuropathic, it's been shown to be persistent in this individual person, this person did in fact evidence encephalopathic regression, there's no evidence for other viruses or other causes for that. And that in my opinion already meets the burden of an opinion at the level of reasonable medical probability.

Now I have gone beyond that degree of explanation to attempt to define some of the links

within links if you like in terms of more precisely how the infective agent affects brain cells and so on. And in doing so, I have tried to do something which neurologists and neurophysiologists often don't know about or talk about this.

Neuroscience isn't at the level where one can routinely expect all the links in such a chain to be definite and defined. Absolutely not. So I actually feel that in offering the mechanism I did, I was exceeding my burden in the context of the present proceedings.

Q That wasn't my question, though, Doctor. If you don't have at least a theory of how it lays out a sequence, then it's just your say-so. It's what we call in law ipse dixit. But we've laid out a nice theory, a nice sequence, a nice chain here, and all my question asked you is which part of that sequence is the weakest in your mind in your opinion?

A No, I understood the question. I'm having real trouble with it because it's so hard to compare them with each other, you know?

Q Well, then name your top three weakest.

A Let me choose my particular mechanism of injury, let's call it the glutamate excitation hypothesis, okay? I certainly don't purport that's

the only available explanation, and I certainly don't say it's been scientifically proven. I think it's a good enough possibility, or probability, or plausibility to meet our standards, but I can't say that I'm intensely confident about it because there got alternatives, and literature has them and these got controversial areas.

Q So if you had to choose that would be the weakest?

A Yes.

Q Doctor, is it accurate to say your pediatric practice at this time is very limited?

A Yes, sir.

Q It's been about 20 years since you've had an active pediatric practice. Is that right?

A Well, yes, almost. It's 17 or something like that. Yes.

Q In your CV you stated you have accumulated extensive experience with disorders in mental development. You listed autistic spectrum disorders as one of these, but you haven't treated children on a regular basis in 17 years. Is that right?

A Yes. That's right.

Q So your extensive experience to the extent it had anything to do with autism would be 17 years

ago?

A My experience in the clinical management of autistic children on any ongoing regular basis certainly expired at that timeframe. My study of the literature, my scholarly involvement, my experience of the type that I described this morning under questioning from Ms. Chin-Caplan, my interactions with colleagues interested in autism, my collaboration in scientific investigations have been very ongoing and continuous.

I've had a continuous interest in autism for many years, but that interest is more expressed at the level of biomedical and biobehavioral investigation, which is the level at which we are operating here, than it is in the routine clinical management of children.

Q I'm sorry. I'm not sure I understood the distinction there. Your interest in autism for the past 17 years has been elsewhere? I understand you to say it's not in actually treating autistic children.

A Okay. Let me see if I can rephrase. Sources of information that a physician acquires about a disorder come basically in two ways. One is his or her clinical experience in it with the actual individuals who are suffering from the problem. The

other area is his or her acquaintance with the sum of the scientific literature with respect to the condition in question.

Now a person can be seeing hundreds or thousands of autistic children and have no understanding of the type of brain mechanisms that we are discussing at this time. What I was pointing out is that although my interpersonal interaction with autistic children has greatly diminished my interaction with the pertinent biobehavioral and biomedical literature continues to be intense.

Q You said there are two different sources but a scientist could get information or experience from both of those sources, correct?

A Yes. If you take the concept of evidence-based medicine, which is much discussed and certainly an excellent concept, that basically says you have to base yourself not on your personal experience, that's anecdotal, but on the product of systematic studies. And I think that the trend at this time is very much in that particular direction.

Q You don't mean to suggest that someone who treats, and also who researches and spends their time with the medical literature on autism is somehow less qualified to speak on that topic, are you?

A You're right, I don't mean to suggest that.

Q Since you've acknowledged that exposure in treatment to children would be one source of information informing you about autism would they have greater knowledge than someone who has limited themselves to reading medical literature on it?

A It depends on the quality of the individual and their engagement than on any number of exposure of one or other kind. I've had massive exposure to attention deficit disorder as it happens, and I've learned an awful lot from it. You know, the last thing I would do is to criticize that type of engagement.

Q You don't belong to any societies or associations that are devoted to the research, care or treatment of autism, do you?

A No. Well, actually, I think I'm a member of IMFAR. I joined IMFAR. Yes. The association that meets once a year.

Q You think you might be a member of that?

A Huh?

Q You think you might be a member of that?

A Well, I think I might. I attended a meeting, and I believe I signed up. I didn't go last year. But to tell the truth I hadn't thought about

that until now. I'll check on it.

Q So it doesn't come to the top of your mind?

A Not constantly. No.

Q No. And not in response to my question. In the past 20 years how many articles have you published on autism?

A I should say five or six. I could locate them for you.

Q That's in the past 20 years. Sure it's that many?

A I'm sorry?

Q Are you sure it's that many?

A I don't know why I'm not understanding this. I'm sure it's my fault.

Q All right. You think it's five or six.

A Well, I don't need to think. If you give me my CV I can count them for you.

Q How many of those articles were original research by you?

A Well, the most recent one was, is and that would be the Fein, F-E-I-N, and colleagues. That came out I think just within about a year ago. It's listed.

Q Fein and colleagues?

A Yeah.

Q This is on autism?

A Yeah. Actually, it may be that Fein, was not the first author. I'm sorry. If you show me the CV I'll show it to you.

Q That's okay, Doctor. It's on file.

A It is, and it was within the last year. It was published in Autism I believe. Liss actually is the first author, L-I-S-S. Thank you.

MR. MATANOSKI: For the record, counsel for the Petitioners just handed Dr. Kinsbourne -- I take it you're handing him his CV?

MS. CHIN-CAPLAN: CV.

BY MR. MATANOSKI:

Q I really don't have any other question in that particular area.

A Then I'll put it away, sir.

Q Thank you. I'm fine with you reading it, but I just want to move on to the next question.

A No. I understand.

Q You mentioned that you periodically, I guess every time that Dr. Menkes publishes his textbook, you do a chapter on there on developmental disorders. Is that right?

A Yes. I do what's now Chapter 18, which is the one entitled Disorders of Mental Development.

Q In the 2006 version you mentioned you worked

with Frank Wood on that?

A Yes.

Q You discussed in your direct that there's an extensive section on autism in that?

A Yes.

Q Did you or he write the section on autism?

A I wrote that.

Q And in that you developed a chart that had the concomitance of autism?

A Concomitance. Yes.

Q I'm sorry.

A Yeah. No. I understand. There is this long, rather dreary table of names.

MR. MATANOSKI: Yes. Actually, I think we could show you what it looks like in your book chapter.

SPECIAL MASTER HASTINGS: Is this --

MR. MATANOSKI: This is I believe submitted as a Petitioners' exhibit.

SPECIAL MASTER HASTINGS: I believe so, too. Anybody have the cite to it? Which tab?

MR. ROONEY: PP.

SPECIAL MASTER HASTINGS: PP. Thank you.

BY MR. MATANOSKI:

Q On that you listed a number of causes or the

concomitance. I'll get it before we're done, Doctor. Under that you listed viral as one of them. You listed three different viral concomitance.

A Yes.

Q There they are, rubella, herpes and cytomegalovirus.

A Okay.

Q Now, in your report you pretty much reproduce this chart.

A Yes.

Q There was one change. You added one. You added measles.

A Right.

Q Anything happen in the last year to cause you to add measles to that chart?

A Nothing happened, but my mind being so much on this seemingly endless litigation I thought to myself, hey, you didn't put in measles.

Q I see.

A I mean, it's extremely rare, but so are the others.

Q On that same publication, 2006, you put out a chart of mental development. We don't need to show you that.

A Okay.

Q Is that an accurate representation in that publication of what you expect to be the developmental progress of an infant?

A You mean a listing of milestones?

Q Yes.

A Yes. I would hope that what I put in is an accurate representation.

Q Now, in this case you've testified to reviewing all the videos that the family --

A I did look through the videos. Yes.

Q Was this the first time you ever reviewed videos for the purpose of identifying signs of autistic behavior?

A Yes.

Q Doctor, I'm going to ask you a series of hypothetical questions. They're going to be based on the facts of this case. What I'm going to do is I'm going to take one fact out and ask you if your opinion is the same.

A Okay.

Q If the answer is yes, no, or you don't know whether that would make any difference, whatever your answer is just feel free to shout it out.

A Okay.

Q Same facts of this case, but there's a

showing that thimerosal either has no role at all or there's no thimerosal. Let's just take the thimerosal out of the equation.

A It wouldn't change my opinion. However, I would like a moment if I may to explain that to the Court in the particular manner.

Q Sure.

A The Special Master designated three questions for us at the beginning of the proceedings. Number one was about the relationship between thimerosal and immune function. The second was the relationship between the measles or MMR vaccination and autism. The third one was about collaboration as it were between thimerosal and the MMR in the causation of autism.

I see myself as addressing number two, the relationship between the MMR and autism. From that vantage point the issue of thimerosal does not impact on my opinion.

SPECIAL MASTER HASTINGS: Just for the record I'll note that it was not the Special Masters, it was the attorneys for the Petitioners, the Petitioners' Steering Committee, who chose to divide up the causation issues into those three categories, but I think you've accurately described --

THE WITNESS: Really? I have a inflated memory I'm afraid.

SPECIAL MASTER HASTINGS: Okay.

BY MR. MATANOSKI:

Q Actually, just to be clear did you think that they're broken up into immune and the MMR and autism and another function?

A Well, to repeat what I thought and I misattributed, but in my mind I looked at three questions and I thought, I'm addressing the middle one. As I saw them, and now I'm totally uncertain about the source of all this, there was a separate question about does thimerosal depress or disregulate the immune system? That was the question.

That's outside my domain and not something that would impact on my opinion as given today. Then there was a question about the relationship between the MMR vaccine and Michelle's autism, and indeed that is what I testified about this morning. Then there was a question about the interaction between thimerosal and MMR.

With respect to the immune system, because we're discussing thimerosal with terms of the immune system not in terms directly of the brain, which is a different topic not being addressed, that wasn't

exactly my area either. This is a very long-winded way of saying that the issue of thimerosal, although very interesting, is not critical to my opinion today.

Q With respect to your opinion is it necessary for -- never mind, Doctor. I'm going to rephrase the question. Use the same fact pattern, but this time there's no fever.

A That there's no fever. That would not change my opinion. Perhaps I could add a comment that point. It seems to me from an overview of the situation that Michelle has an unusual propensity to react to the inflammation to provocative stimuli. The interesting thing about the fever is that it was so high and so long. In other words, the child was reacting with more inflammation to a given provocation, namely the vaccination, than most anybody else.

I was wondering, is this a tendency that she has that she also exhibits elsewhere? It seems she does. She reacted with inflammation in the gut, and not just in one part but in multiple parts, she reacted with inflammation in the eye in the iris, the rear and maybe also the optic nerve, and she reacted with inflammation in the two ankle joints.

So I do think that the fever is of interest

in terms of being part of a general impression of a rather excessive tendency to react with inflammation which is of interest to me because I am invoking information in yet another organ, the brain. So in that general sense of a pattern it's significant to me, but if you were to ask me everything else except the fever, no, that wouldn't change anything.

Q So in this fact pattern with no fever you have the MMR and seven days later no fever but the onset of some symptoms that are later believed to be signs of autism your opinion would stay the same?

A My opinion would be the same. Well, again, if I may have a bit of license to say a few more things on that topic?

Q Sure.

A If it's okay to make this remark, I hope. The onset was unusually abrupt in this child. Being that abrupt I'm not surprised that there was some systemic reaction such as the fever.

Q But wait. Just to be clear you said it's okay to not have the fever, you're opinion stays the same. So we're taking the fever out. The onset of uveitis and other inflammation isn't 'til much later, but the onset of autistic symptoms is within seven days. Is your opinion the same?

A Well, my opinion is the same. Yes.

Q Now, if we move the onset period out to two weeks after is your opinion the same? The onset of the autism.

A My opinion will be the same, but I think that hypothetical is a little improbable. This is what I'm trying to explain, that I'm really receptive to hypotheticals, and I'm not trying to obstruct you.

Q I understand that. I understand that. Please go ahead. So the timing is important to you in some fashion?

A Well, it is of interest in the following respect, that I have seen many, many descriptions of regressions and some are more subtle than others, some are more gross than others, but they tend to take more time. This came on really fast, which is why in my first report I actually suggested a table encephalopathy it came on so fast.

Given that it came on so fast I'm more comfortable with a systemic disturbance like a fever to accompany such a rapid process. I would much less need the fever if it came on very, very slowly over three months, you know, at some subsequent time. Now, if you remove the onset two weeks as we do hypothetically then the fever really loses meaning

compared to the meaning it did have for me in the actual state of affairs.

Q So in this factual scenario where can I move the timing for the first onset of the autism before you lose confidence that it's related to the MMR? And let's move it each way. Let's start by saying how far away from the MMR, how far out.

A You said each way?

Q Yes. I mean we're going to move it closer to the MMR.

A You mean as compared to seven days? Is that what you're saying?

Q Yes. It will be easier than me trying to guess where the limits are. I want to figure it out by just you telling me where does it go from the point of MMR to the onset of autism that you start going below that 50 percent threshold of confidence in your opinion?

A Okay. Well, the systematic literature on this is not available. In fact, it is as I earlier remarked amazing how little actual descriptive ways of regression, although it's actually mentioned. My information on this is basically derived from my experience in the U.K. when I reviewed many, many children with regressive autism.

That was part of my job, and it was mentioned this morning. The distribution of onset relative to MMR was quite variable. We expect that in natural disease. In some cases they did come on within say a week or so as in this case, and perhaps the majority came on after two months or perhaps three months and then it sort of tailed off.

I didn't see a cut-off point. So what I would say is that beyond about three months my confidence might decrease, but not necessarily to a below 50 percent level. That depends on other features of the case as well.

Q Okay. We're talking about this case. I was trying to make it easy by just using this fact pattern.

A But by moving it you make it a different case.

Q Yes. I just want you to say in this factual scenario where do you start losing confidence when you take it out to the end point? How far away from the MMR?

A See, I have such trouble losing confidence because we've got a positive measles virus biopsy. The virus is there, it shouldn't be, it's neuropathic and we have an unexplained encephalopathy. So I'm

trying to

lose confidence as the interval gets larger, and I might in other cases, but in this case I have trouble doing that.

Q Okay. That's fair, Doctor. So it's the measles virus genomic material that was recovered that's really key?

A It is.

Q What if in this fact pattern there was no finding of inflammatory bowel disease, no inflammation of the gut, but all the other factors are the same?

A I would lose confidence in the gastroenterologist because why would he or she take a chunk out of a gut when there is no inflammation?

SPECIAL MASTER HASTINGS: You'd lose confidence in the treating gastroenterologist?

THE WITNESS: Yes, I would. Not in our expert. No, no.

SPECIAL MASTER HASTINGS: Okay. The one who decided to take the biopsy?

THE WITNESS: Yes, because I wouldn't understand if there was no inflammation on what it is he or she was biopsying and for what purpose. So I'm being a bit contrite I'm afraid.

BY MR. MATANOSKI:

Q I understand sort of. What it really keeps

coming back to is that positive measles virus genomic material in the gut?

A Yes.

Q Okay. Then let's take that one away. Same fact pattern but there's no recovery of positive measles virus genomic materials.

A No opinion from me.

Q You would not find causation in that instance?

A No.

Q Would you find that in any case of MMR and eventual ASD whether there is autistic enterocolitis or not if there wasn't, is this the sine qua non, the recovery of the positive measles virus?

A As you correctly perceive I was talking about Michelle Cedillo. This case, this hearing, this situation, the first case in an important process. I would not give an opinion on a case that didn't have positive biopsy in this situation, nor would I give an opinion if there was no reason to even think of measles. I wouldn't then say it was measles. Let us suppose that the Court has made its determinations and we were now looking at individual cases.

It would be extravagant on my part to require that every one of them has had a biopsy given

how specialized it is and how hard it is to get them, and I would be open to other evidences compatible with the measles virus, but I can't tell you now because I haven't considered that really.

Q If we take the measles virus away and you still have the enterocolitis and the other factors this case is really in terms of your theory a strong case, right?

A Yes, I do believe so.

Q And if you took it away from this case and you wouldn't be willing to, and in the other cases they may not have the fever, they may not have the autistic enterocolitis, is it going to be more likely to you?

A Well, no. As I tried to explain I really thought that the first case heard by this Court should be one that potentially would impress the Special Masters, and I would not have thought that this would be a right case to present, nor representative, really informative about the science that is being determined if it didn't have that finding because that finding as mentioned as counsel brought out in direct examination this morning it was really when -- in England I required virus in the gut and in the cerebrospinal fluid.

I gave opinions in four cases. Maybe that's the best way of explaining it. They all had positive virus in the gut, three had positive virus in the cerebrospinal fluid, okay? I gave opinions on the three that had positive in gut and spinal fluid, and I gave one more opinion. There was a child who was typical except there was nothing in the cerebrospinal fluid found.

I convinced myself, argued to myself that since that child was in all other respects so similar to the first three that it reached my criterion for causation. Now, in the sense all these different cases you're asking me a similar question I believe, which is once we have got a reliable picture of what a full house would be, an ideal case, then we can decide that the world is never like that over and over again, which elements can we relax?

Now, the question is a difficult one for me when this key element of evidence that there is measles virus in the system when it shouldn't be cannot be addressed. So let us suppose, for example, that immunologist's informance that immunological findings, which would be proxy for that finding if one could make inference out of the antimeasles antibody or some reaction of the cellular immune system to

measles which could stand in instead, I would accept that.

Then as consensus increased and we keep seeing that same pattern which has been already validated by the investigation then we would do what all doctors do all the time, accept a diagnosis with less evidence than when it was first established.

Q Doctor, we've already had testimony from you under oath that in this fact pattern, and I take it this fact pattern is the strong fact pattern, there's only one thing missing that you'd want more and that's recovery of measles virus genomic material from the CSF, correct?

A Right.

Q So that would make this case stronger?

A That's correct.

Q Now, in this case you just testified under oath that if I were to take away the measles virus genomic material recovery, that test result from the gut biopsy tissue, you would no longer hold the opinion that this was a case of MMR causing ASD?

A I would no longer have held that opinion for purposes of this hearing.

Q Okay. Now, other fact patterns that come up that don't have what you're presuming is an immune

disregulation, evidence of inflammation, indeed, evidence of inflammation not only in the gut but arthritis, possibly arthritis at least, uveitis, the onset of autism within seven days after, at least that's the understanding that you have in this case, correct?

A Yeah.

Q Other cases that do not have those features that are important to your theory of causation are in your view supportive of your theory of causation would be weaker, wouldn't they, Doctor?

A You're absolutely right. Absolutely.

Q So in those cases wouldn't your opinion logically be that you couldn't render an opinion that MMR caused autism?

A Well, that certainly sounds logical, but life is really difficult. But let me give you one example.

Q It was really just a simple question.

A No. It was a good question.

Q I don't have many of them. Don't squander it, Doctor.

A We both do our best. Here's my attempt at a good response.

Q I think you already had one. As far as I'm

concerned your response no, you couldn't offer an

opinion in those cases was a good response.

Q I understand that it's satisfactory, but I would like to add one point if the Court --

SPECIAL MASTER HASTINGS: Please do, Doctor.

THE WITNESS: There might be, and in fact I'm sure there are cases which do indeed lack of some of those ingredients like Mr. Matanoski correctly listed but have another ingredient which isn't at issue here, a child that had MMR twice and had an autistic regression twice, in other words, a sort of double hit or challenge rechallenge.

If we have a case like that then I would be much easier convinced even without a number of the other ingredients that we've been discussing. So what I'm trying to do is not to preclude children I haven't even heard about by injudicious testimony at this point. I may not have managed it, but I'm trying my best to do that.

BY MR. MATANOSKI:

Q Certainly, Doctor, if another case came by and your opinion changed you'd be free to come in here and say why your opinion changed. Now, with the example you just gave, two MMR, and a regression and then a further regression, is that what you're --

A Yeah. There are two patterns. I was aware

of such cases in Britain, and I do believe they exist even in the current cohort here, but I haven't actually reviewed any. One of two things happens. One of the things that can happen is that there's an MMR, there's the onset within approximate time period of an autistic regression and the child reaches some plateau of dysfunction and then gets better because some children do get better.

Some were better, or a lot better, or essentially better and then the second MMR is given and we have another regression. That's one pattern. The other pattern is that the child has an MMR, has the regression, stays at the plateau for a period of months at the second MMR and gets worse still. I have come across examples of both of these on a clinical basis.

I mean, not ones that I studied exhaustively, but examples of these, and these are the two situations. Both challenge-rechallenge, which I would find very persuasive even in the absence of some other evidence that you listed.

Q From a virological standpoint how is that possible, Doctor? Your theory is the virus is persisting and causing damage. Why would a second MMR make any difference?

A It would increase the viral challenge.

Q There's more virus now? Is that what it is?

A Yes. But, you see, in the challenge-rechallenge, the mechanism is by definition not an issue. You know, as the Institute of Medicine has found it's a situation in which the alternative interpretation of coincidence is so remote that certainly at the standards of reasonable medical probability I think that the criterion is easily reached.

Now, what the mechanism is is of great interest but not critical to my opinion in such a case.

Q So you may, though you aren't going to be held to this is the way I understand this, if you had a situation where there are two MMRs and you had regression after the first and consistent with your theory that there's persisting virus and then you gave a second MMR and there's, what, more regression? I'm not sure I understand you.

A Well, if I could repeat?

Q I want to understand what you're saying is a situation where you might still find that.

A Absolutely, and by the way, the virus, I mean, it is permitted to disappear. I'm not claiming

that once it's persisting it's going to stay forever. I don't know that. I don't know whether some of the virus was eliminated before the second challenge happened. This is all way beyond the level at which we're discussing detail.

I just wanted to make clear the point that there are two patterns of challenge-rechallenge. One pattern is that you give the first MMR, there is a regression, there is a measure of recovery, and then after a second MMR that is lost and the child is again more deeply implicated. The second pattern is that, indeed, there is a plateau of autistic deficit after regression which then after the second MMR is made worse yet.

I've seen reports, I've seen case files in which either of those two things appear to have happened.

Q So this is based on your litigation work?

A Well, it's based on my precious knowledge and experience which I gathered over four arduous years while involved in litigation. Yes.

Q So it was involved in your litigation work not based on your --

A Yeah. It really tingled my interest.

Q Okay. Not based on your research into

autism?

A Yes. I understand. I am not aware of any article which in fact documents challenge-rechallenge in this context.

Q This is your theory?

A No. It's my observation.

Q It's an observation.

A It's my clinical experience in a sense if you can regard reviewing charts as clinical experience. I'm aware of such children, but I'm not aware of a scientific publication which has assembled, done and presented the case.

Q So it's based on clinical experience if one considers working on litigation clinical experience?

A No. If one considers reviewing medical records. If I review medical records the quality of my review is not impaired by the fact that lawyers are interested in my doing it. I'm reviewing a chart. I'm drawing my conclusions.

Q And those charts are given to you for a reason, correct?

A Definitely.

Q And that's to make a case. Is that right?

A Yes.

Q Now, you were testifying earlier about the

opsoclonus myoclonus condition that you first described 45 years ago?

A 1962. Yeah. Correct.

Q That's a neuroimmunologic condition?

A Yes.

Q Clinically what's the first thing that you do when you suspect that's the condition?

A One of the first things you do is to test for neuroblastoma.

Q How do you do that?

A Well, we used to do it by looking at the substance called VMA in the urine, but it was really to inconstant. Nowadays, you'll do an MRI and see whether you can detect a tumor.

Q After you do the MRI nowadays what would be the next step?

A It depends a bit on what the MRI shows.

Q If the MRI doesn't show anything what would be the next step?

A Well, actually, you could start your ACTH even before you --

Q Would you do a spinal tap?

A For the opsoclonus myoclonus? You probably would as part of the investigation, but it doesn't usually give you information that changes anything in

practice.

A If you suspect it you'd probably do that?

A Yeah. You would also do an EEG. I mean, so I didn't know that you were asking about work up.

Q Okay. I'm sorry.

A You have a child with myoclonic immunology hardly anything is, you know, it's not like shooting pigeons. You very rarely have one diagnosis and that's it, so you always have to rule out and take precautions. In case of a child with myoclonus you want to be sure there's no epilepsy going on, and you do an EEG and you would do a spinal tap and maybe look for some evidence of inherited disorders of metabolism.

You know, there is a work up that you would do.

Q You mentioned in your report that since 1989 you testified in hundreds of vaccine cases?

A Yes.

Q You were mentioning towards the end of your testimony this morning your work in the litigation in the United Kingdom?

A Yes, sir.

Q What hourly rate were you paid?

A In terms of the exchange rate, which

fluctuates of course, it was about $300 an hour on a par with what I was charging in this program.

Q I'm sorry. It's on a par with?

A With what my charge is in this program. $300 an hour has been over a long period my rate. Was at the time my rate is what I'm saying.

Q You said you were working on that litigation for about four years. Is that right?

A Yes.

Q Your work day or work week nowadays is pretty much taken up with some lectures occasionally, but your litigation work you described mostly as being on the weekends?

A Yes.

Q Now, at that period of time for those four years was your work week similar to now or was it different?

A My work week was similar. I didn't have three little girls, who are quite time-consuming, but yes, it was similar.

Q Because it's been described that you were spending a lot of time on this litigation. Isn't that accurate?

A Yes.

Q You were?

A Yeah.

Q You were spending hours and hours on the litigation?

A Absolutely.

Q Wasn't it more like a full-time job?

A Well, if full-time means 40 hours a day I work much more than that.

Q Forty hours a week, you mean?

A Sorry. It's getting late in the day. I work a lot more than 40 hours a week. It was a lot to do. Yes. I agree.

Q And during that time you were also testifying in vaccine cases here, too, right?

A Yes.

Q You were spending a lot of time as a litigation witness during that whole period, correct?

A Yes.

Q And you were talking about discussions that you had with Ms. Chin-Caplan. You were talking about discussions that you had during that litigation. During that time you said that you saw that there were reports exchanged between the different parties, and you got to see not only your fellow experts on the Claimant's side but you also got to see the defense reports?

A No.

Q You didn't?

A We didn't see the defense reports. In fact, we didn't even know who the defense experts were until their definitive reports came in. What we had were interrogatories initiated by the defense.

Q So you didn't see the Defendant's reports at that point?

A I saw no preliminary reports of the Defendant or that were intermediate reports. I only saw their final opinion reports that were in that.

Q Did you meet with the other experts at the same time? Did you have discussions with Claimant's experts?

A I met with them numerous times.

Q Did those include experts who were talking about the PCR results that were being used in the case?

A Yes.

Q And those were experts from Unigenetics?

A I certainly met Dr. O'Leary and Dr. --

Q Did they explain problems that they were having at the Unigenetics lab?

A I don't recall that. What problems are you referring to?

Q Did they explain that they were having problems getting positive results from negative samples?

A This is new to me.

Q They didn't discuss that with you?

A If there were such problems they would have discussed them with people like Dr. Kennedy and his group of colleagues, and I might have been peripheral to such a discussion because it's not in my field.

Q If you were relying, though, on the PCR results --

A If something major had happened I would have known. Voice is gone.

Q Absolutely. It's been a long time.

A Yeah.

Q Drink up.

A I can't locate that information I'm afraid. I don't remember that, but I'm not testifying it didn't happen, but I think Dr. Kennedy and other colleagues would be better informed.

Q There were some peripheral discussions about the Unigenetics lab?

A Not particularly.

Q So you don't have any knowledge of that?

A I have knowledge of the results, but I have

no knowledge of any technical issues that might have arisen. They're way outside my expertise.

Q If it were shown to you that those results were of questionable reliability would your opinion change?

A Well, of course.

Q You said that the Legal Services in Great Britain ceased funding of litigation because they felt that they didn't have enough proof to show that measles, mumps, rubella virus is causing autism?

A It wasn't really an issue of anybody presenting them proof because they are not the Judge. However, it is a part of their role to monitor the progress of an extended litigation of that kind of scale that I described to you, and the lead barristers on both sides render detailed reports annually on the progress of the litigation.

For I guess four or five years the Legal Services Commission had been satisfied that further funding was justified. In other words, that the promise of the litigation was at a sufficient level. Then abruptly the last year given evidence of progress that was actually better, particularly in terms of discovering the cerebrospinal fluid findings, they came to the opinion that the chances of success were

now below 50 percent.

So I'm relating what happened factually. I'm not privy to their state of mind.

Q The cerebrospinal fluid findings that you were talking about, were those from Unigenetics?

A Yes.

Q And those findings were never published?

A Those particular ones were not. There were three cases. No, they weren't published.

Q And Unigenetics is the same lab with Dr. O'Leary, Dr. Uhlmann and Dr. Martin. Is that right?

A Correct.

Q This was in late 2003 as you recall?

A I think maybe in early 2003. I have some notion it might have been about April, but I won't swear to it.

Q Now you mentioned the distinguished individuals on that list of individuals who had received money from Legal Services for their participation on behalf of the claimants in the U.K. MMR litigation.

A The ones who were consulting and were paid a consulting fee, yes.

Q You mentioned that there are some very distinguished people on that list.

A Yes.

Q You didn't mention Andrew Wakefield as one of the distinguished people.

A I was talking about consultants attracted to the problem from several countries, from many disciplines. Andrew Wakefield was there from the beginning. I do believe he is distinguished if that's the question you're asking me. I wasn't leaving him out as a pointed gesture.

Q In your expert report, you rely on Dr. Wakefield's work, including his 1999 report, as evidence of a condition there to described, an autistic enterocolitis condition.

A Yes, I refer to his work, and I work with his group on that topic.

Q Were you aware that undisclosed at the time of the publication of that work Dr. Wakefield had been contacted by Legal Services and lawyers for Legal Services to be involved in the U.K. MMR litigation?

A I mean, I have become aware of that. Yes.

Q Okay. You've become aware of that?

A Right. I mean, I wasn't around at the time, but yes.

Q And were you aware that that 1998 Lancet article Dr. Wakefield didn't disclose that he had

actually

received money from lawyers bringing litigation against MMR alleging that MMR caused autism?

A Right. I was aware of two more things. May I mention them?

Q Certainly.

A One is that some weeks, I think six weeks, after publication Dr. Wakefield wrote a letter in response to another letter in which he mentioned that involvement. So the information was available to Lancet in that general time period and it didn't cause the outrage which it caused many years later.

The second thing that I'm aware of because I happened to look through the volume Lancet of 1998, I couldn't find anybody who had disclosed conflicts of interest, and I have trouble envisioning an enormous number of -- this is a fat volume -- an enormous number of investigators all sending in experiments worth publishing in Lancet, which is an outstanding journal, with no conflict of interest.

So it seems to me, although I'm sure others could speak to this better than myself, that it wasn't at the time standard practice to communicate that kind of information when you submitted articles because why is there nothing there anyplace? Unless I overlooked something.

Q Are you aware of Dr. Wakefield ever making that apparent to the general public in Great Britain or the world that he had this potential conflict of interest at any time before it became apparent by the publication of the newspaper article reviewing that?

A Well, I just testified that he actually informed the journal itself of this matter within weeks of the publication of the article. So it's not as if he seemed to be hiding it.

Q He appeared at numerous news conferences. Did he ever disclose it at that point?

A I certainly wasn't present for these news conferences, but I'm trying to imagine a scientist going to a news conference or giving a public lecture and saying by the way, I've told you what my work is, but don't forget I was in conflict of interest. I don't think it's customary practice to do that. I think if there is a conflict or you believe there is one you make it known and that's it.

By the way, what happens is not that the journal turns you down, it is that they record the conflict of interest so the reader can decide what weight to give to the findings in view of that. But once you've done that you don't run around mentioning it every time you give a lecture on the matter, and I

wouldn't expect him to do that.

Q I want to come back to that in a moment. I just wanted to actually ask you something back to your report in another matter. You mentioned Dr. Bradstreet's CSF finding as important to your thinking in this case.

A Yes.

Q Doctor, do you know Dr. Bradstreet?

A I've met him. I don't know him.

Q Do you know -- and this is the part of your report that's coming up now. Now, he's not a neurologist, is he?

A No, no. Not at all.

Q He's not a virologist, is he?

A I don't think that he has a particular specialty. I'm not totally sure of that, but I'm not aware of him being a specialist in the domains that we're discussing.

Q Do you know how he recovered measles vaccine virus material from cerebrospinal fluid?

A Well, he didn't recover it. I mean, he sent it to Ireland.

Q So it was sent to the same lab?

A Yes.

Q Unigenetics?

A Correct.

Q Do you know if the journal that he published these results in is indexed?

A Which journal was it in?

Q You cited it, Doctor.

A Yeah. Okay. I think it was probably the Journal of American Physicians and Surgeons or some such title.

Q That's what it was.

A Okay. I don't know much about the Journal.

Q So you don't know whether it was indexed?

A Whether it's?

Q It's indexed?

A I have no idea.

Q Do you know what the term indexed means?

A Sorry. Could you say it again?

Q Do you know what the term indexed means in relation to a journal?

A In the indexed medicals? Maybe I should know something. I don't.

Q Do you publish important work in nonindexed journals?

A Apparently not. When I've sent an article for publication I've never first tried to determine whether the journal was indexed mostly because I don't

know what that means.

Q That's fine, Doctor. So Dr. Bradstreet is not a neurologist, he's not a virologist. He's reporting on a neurologic and virologic finding. Is that right?

A Correct.

Q Do you know anything else about him? I mean, you know of him?

A I know of him. I know he has a practice in Florida someplace, and he sees a lot of autistic children. That's pretty much what I know.

Q And he sells them medication?

A He does what with them?

Q He has a mail order business to sell them medication?

A I'm not aware of that. I don't know.

Q Do you know that he calls himself the good news doctor? Were you aware of that?

A No. It's pretty funny. No, I didn't know that.

Q And he has a website to that effect?

A I'm interested to hear it.

Q I'm turning back to the Lancet article in 1998.

A Yes, sir.

Q You said that you know that Dr. Wakefield wrote a letter to the journal disclosing the conflict of interest?

A I don't think he was disclosing it if he was referring to it. I don't think he was aware that he was in conflict, but my information is that he referred to the conflicts of the work in that letter.

Q Now, a potential conflict of interest can influence whether a journal will go forward and publish an article, can't it?

A Certainly, but in fact what the journals do is simply record it and let the reader decide. If they didn't do that you would get hardly any pharmacological information published because the realities of the search on drugs including vaccines is that it's expensive and the NIH can't be relied upon to fund it fully and many very, very reputable investigators are heavily supported by industry.

It would be absurd not to publish their work because of that.

Q I understand that, Doctor. It's a factor, though, that journals may consider in deciding whether or not to publish an article, correct?

A If it was exceptionally egregious in its appearance, but I don't want to say it would have to

be that the person was -- I don't want to make it up. It would have to be an exceptional case.

Q Didn't the Lancet say that this was a very critical factor for them that was not disclosed to them at the time of publication? Didn't they say that in 2004?

A In 2004, they said it. In 1998, they didn't.

Q In 1998 they didn't when Dr. Wakefield didn't disclose it to them.

A Right, but they didn't after that letter either. I don't know what they're thinking of, but it seems to me that the Lancet's reaction on the scientific point of view is totally out of proportion to the infraction that they are complaining about.

Q In your view, it's out of proportion?

A Well, I'm testifying. In my view, yes. It really requires further explanation in my opinion.

Q The Lancet actually published their findings in 2004 and said that it was material to them and it had not been disclosed. They put that in their publication, did they not?

A You mean if I understand you correctly, sir, they published the fact that it hadn't been disclosed. Is that what you're saying?

Q Yes.

A Yes, I'm aware of that.

Q And that was material to them?

A Well, enough where they had some reason for publishing it.

Q And of the 12 authors of that article 10 could be contacted, 10 and Dr. Wakefield, one could not be contacted, but of those who could be contacted all but Dr. Wakefield pulled their support for that report. Isn't that right?

A No, it's wrong. That's completely wrong.

Q If you look on the screen there's retraction of interpretation, and it's signed by 10 of the 12 authors of that article.

A Right. Well, that's different from what I heard you say before. Let me explain that because it's an important point. What you have in the 1998 article, which incidentally is only one of many but somehow always seems to be the topic of discussion, are findings. It's a report. It reports findings.

Not a single finding in that report has been retracted. Now, it says an interpretation was retracted, the interpretation that the MMR caused these children's problems, but there is no such interpretation in the original article. All that they did was to mention that it's possible that the MMR did

this.

And what these 10 poor people retracted was a possibility. Now, it's probably the first time in the history of medical science that somebody has retracted a possibility because the alternative to a possibility is an impossibility, and doctors don't generally say that things are impossible. So I don't know what went on in the mind of these 10 people that six years after the event they suddenly woke up and thought, we need to retract this.

Q Six years after the event, shortly after it was disclosed to the public this conflict of interest that Dr. Wakefield had. Is that right?

A Well, they must have had a reason.

Q And those were his co-authors?

A They were his co-authors. Yes.

Q Were you aware, Doctor, that at the time that Dr. Wakefield published that 1998 report he had on file a patent for a monovalent measles vaccine, and that he stood to gain financially from any dispute over the use of MMR?

MR. MATANOSKI: Yes, sir?

SPECIAL MASTER HASTINGS: Before we go on to that one, Mr. Matanoski, let's just make our record here. Just a minute ago you showed a document that

was headlined Retraction of an Interpretation.

MR. MATANOSKI: Yes, sir.

SPECIAL MASTER HASTINGS: Is that already in the record?

MR. MATANOSKI: I believe it is, sir.

SPECIAL MASTER HASTINGS: I believe it is. For the record, does anybody know offhand where that is? If you don't, that's okay, we can find it. Okay. So we don't need to mark that as a trial exhibit. I just wanted to clarify that. Okay. Now you're going on to a different document. Go ahead, sir.

THE WITNESS: I remember the question. Sorry.

BY MR. MATANOSKI:

Q Were you aware that he stood to gain financially from any criticism that would be generated of the MMR vaccine? If that vaccine were to fall into disuse he stood to gain financially.

A Okay. Two responses. One is if that were really true as opposed to being a myth then that would be reprehensible. Secondly, at this point I wonder why we're discussing Dr. Wakefield.

Q You cited him, Doctor. Your part of this whole case is MMR autism. That's what he was writing on, that's his theory.

A It's true he and numerous co-authors were presenting data which was not challenged and not disconfirmed by the Lancet. What I'm saying is I have no reason to believe that Dr. Wakefield, whatever his financial involvement that you represent to me occurred, that his findings were inaccurate. Now, as to his interpretations I don't have to accept them. I make my own interpretations.

SPECIAL MASTER HASTINGS: Before we go on --

MR. MATANOSKI: I don't believe you have the actual patent application.

SPECIAL MASTER HASTINGS: Okay. The patent application was the document you just mentioned.

MR. MATANOSKI: We'll make that a trial exhibit, sir. I'm not sure that's in the file.

SPECIAL MASTER HASTINGS: Okay. That would be No. 7.

MR. MATANOSKI: Okay.

BY MR. MATANOSKI:

Q And, Doctor, isn't it true that of the payments made for the U.K. litigation the top three recipients of payment involved in that litigation were Unigenetics, Dr. Wakefield and yourself?

A Correct.

SPECIAL MASTER HASTINGS: Now, again, that

was Trial Exhibit 6. I'd like to mention, why I do this, folks, is that when I go back and read the transcript, when we each do, if it's mentioned in the record in the transcript what document we're looking at it makes an awful lot easier to find at that time.

So for that purpose I will also say the document about the retraction of the interpretation was mentioned several places in the record including Exhibit P, Tab 114. Go ahead, Mr. Matanoski.

MR. MATANOSKI: I'm finished at this time.

SPECIAL MASTER HASTINGS: Okay. You're done at this point. All right.

Ms. Chin-Caplan, any redirect?

Wait, wait. Before we do that do Special Masters?

(No response.)

SPECIAL MASTER HASTINGS: I think now would be a great time for a 15 minute break. We will take a 15 minute break and then be back.

(Whereupon, a short recess was taken.)

SPECIAL MASTER HASTINGS: All right. We're back in session here. Dr. Kinsbourne is back at the witness table.

Ms. Chin-Caplan, did you have any redirect?

MS. CHIN-CAPLAN: No, Special Master.

SPECIAL MASTER HASTINGS: All right. Any questions from the Special Masters?

(No response.)

SPECIAL MASTER HASTINGS: All right. Then, Ms. Chin-Caplan, I assume that concludes the Petitioners' case in chief.

MS. CHIN-CAPLAN: Yes, it does, Special Master.

SPECIAL MASTER HASTINGS: All right. Then that's all the testimony we're going to take this week. Are there any matters, counsel, that we should talk about on the record before we adjourn for the day?

Mr. Matanoski, anything?

MR. MATANOSKI: No, sir.

SPECIAL MASTER HASTINGS: Ms. Chin-Caplan, anything?

MS. CHIN-CAPLAN: No, sir.

SPECIAL MASTER HASTINGS: All right. Well, then, to all the folks here in the courtroom and those listening in we are done for the day and for the week. We will start again on Monday morning with the beginning of the Respondent's case. We have Dr. Fombonne and Dr. Cook slated to testify on Monday, and we thank you all for your patience and your attendance

this week. We are adjourned until Monday, 9:00 a.m.

(Whereupon, at 3:27 p.m., the hearing in the above-entitled matter was recessed, to reconvene Monday, June 18, 2007, at 9:00 a.m.)

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REPORTER'S CERTIFICATE

DOCKET NO.: 98-916V

CASE TITLE: Theresa Cedillo v. HHS

HEARING DATE: June 15, 2007

LOCATION: Washington, D.C.

I hereby certify that the proceedings and evidence are contained fully and accurately on the tapes and notes reported by me at the hearing in the above case before the Office of Special Masters.

Date: June 15, 2007

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