

**Dr. Jerome Lejeune**  
**June 13, 1926 – April 3, 1994**

Prayer to Obtain Graces by God's Servant's Intercession

God, who created man in your image and intended him to share your glory, We thank you for having granted to your Church the gift of professor Jerome Lejeune, a distinguished servant of life. He knew how to place his immense intelligence and deep faith at the service of the defense of human life, especially unborn life, always seeking to treat and to cure. A passionate witness to truth and charity, he knew how to reconcile faith and reason in the sight of today's world. By his intercession, and according to your will, we ask you to grant us the graces we implore, hoping that he will soon become one of your saints. Amen.

(As the cause for canonization of Lejeune moves forward, testimonies of medically inexplicable cures sought by his intercession will be recorded, and holy cards with this prayer are available at this address:

Postulation de la cause de beatification et de canonisation  
du Serviteur de Dieu Jérôme Lejeune  
Abbaye Saint-Wandrille F-76490  
Saint-Wandrille, France.)

**Dieu qui as créé l'homme à Ton image et l'as destiné à partager Ta Gloire, nous Te rendons grâce pour avoir fait don à Ton Eglise du Professeur Jérôme Lejeune, éminent serviteur de la Vie.**

**Il a su mettre son immense intelligence et sa foi profonde au service de la défense de la vie humaine, tout spécialement de la vie à naître, dans le souci inlassable de soigner et guérir. Témoin passionné de la vérité et de la charité, il a su réconcilier aux yeux du monde contemporain, la foi et la raison.**

**Par son intercession, accorde-nous, selon Ta volonté, les grâces que nous implorons, dans l'espérance qu'il compte bientôt au nombre de Tes saints. Amen**

**Dr. Jerome Lejeune**  
**Expert Witness Testimony**  
**Regina, Saskatchewan Canada**  
**For the Plaintiff, Joseph Borowski**  
**Trial For Life**  
**In the Court of Queen's Bench**  
**For Saskatchewan**  
**May 12, 1983**



<http://amislejeune.org/>

## Foreward

This text has been prepared for a commemoration of the late Joe Borowski on the occasion of the 25<sup>th</sup> anniversary of the Trial for Life, Regina, 1983. Mr. Borowski himself arranged for the publication of the transcript of evidence and proceedings from this trial very soon after its completion. The idea for this separate document arose when I learned about the Cause for Beatification and Canonization of the Servant of God, Jerome Lejeune.

Dr. Lejeune was accepted as an expert witness at the trial for life. The life of each individual new human being, he repeated often in the course of examination and cross-examination, “begins at the instant that all the necessary and sufficient information is combined in order to define the new being. That is right from the beginning.”

Quotes such as the following can also be read in his testimony:

“If, and I hope God will never permit that – the Pope was saying that abortion was killing nobody, I would stop being a Catholic for scientific reasons, because no moral authority can make me believe that discarding an early human being is not discarding a human being.”

Science, according to the testimony of the experts recognized by the Court of Queen’s Bench for Saskatchewan at the Trial for Life, has determined that human life begins at fertilization. Fertilization occurs in the fallopian tubes, and by the time of implantation in the wall of the mother’s uterus, a new and distinct human being exists.

There is only one truth, whether arrived at through science or through faith. Dr. Lejeune explained in his testimony how biology gives the information upon which morality is based. His evidence from 1983 is consistent with more recent explanations, such as during a conference in 2006 in Rome addressing “The human embryo in its pre-implantation phase.”

The scientists at this conference explain fertilization with phrases similar to those of Dr. Lejeune: “right from the moment of his/her constitution as an organism”, the new human is on an intentional path of development. Before implantation, it is not helpless, but rather directs its own generation and development. In other words, “there cannot be a continuous and gradual transition from ‘something’ to ‘someone.’”

These scientists make conclusions which reinforce the earlier testimony of Dr. Lejeune from 1983:

“one cannot think of a human life without thinking of the life of a specific human being.”

“The data provided to date by embryology and genetics allow us to assert that from the first stages of embryonic development, we find ourselves in the presence of a biological human individual.”

“If in doubt as to whether one finds himself in the presence of a human person, it is necessary to respect the human embryo as if it were so; otherwise it would be accepting the risk of committing homicide.”

The document, “The Human Embryo in its Pre-Implantation Phase: Scientific Aspects and Bioethical Considerations” is available online at:

[http://www.academiavita.org/english/Documenti/testo/embrio/vol\\_embr\\_ingl.pdf](http://www.academiavita.org/english/Documenti/testo/embrio/vol_embr_ingl.pdf)

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**Dr. Jerome Lejeune of Paris France: Expert  
Witness Testimony in Regina, Saskatchewan Canada  
for the Plaintiff, Joseph Borowski, during Trial For  
Life In the Court of Queen's Bench For  
Saskatchewan.\_  
May 12, 1983**

Dr. Morris Shumiatcher examining:

Q. You are Professor Jerome Lejeune? A. Yes.

Q. And where do you live, sir? A. I live in Paris, where I'm born.

Q. And what do you do in Paris? A. I'm professor of fundamental genetics at the University Rene Descartes, which is a part of the University of Paris.

Q. Rene Descartes? A. Rene Descartes.

Q. D-e-s-c-a-r-t-e-s? Yes, sir. And I'm teaching fundamental genetics in the medical school, that is to the curriculum of the students in medicine.

Q. Now, I wonder, if you could tell His Lordship something about your background in the professional field, Dr. Lejeune. A. My Lord, my background was that first I started as a student in medicine and then I got M.D., then I got Ph.D because I went to the science – faculty of science – to learn genetics. From that moment on, I came in to the Research Board, which is the National – Centre nationale de la recherche scientifique (National Centre of Scientific Research) and for ten years I was doing only research on basic genetics applied to humans.

Q. That would be at the University? A. In Paris, the University of Paris.

Q. University of Paris. Yes? A. Only one little parenthesis during my stay in Paris. I went for two months in Caltech, California Institute of Technology, to give there the first course on human genetics that they had because they had no professor of human genetics; and then I was invited to give a full course of human genetics in Caltech, California Institute of Technology.

Q. What year would that be, Doctor? A. My memory of the date is not that perfect. I should look in my papers, but it was around '62, something of that kind.

Q. Nineteen sixty two. Yes? A. Sixty-one, sixty two; I'm not extremely expert on dates.

Q. Just carry on then. Were you associated with l'Hopital des enfants maladies? A. Yes, when – after ten years in the Centre nationale de la recherche scientifique, I was elected as a professor of fundamental genetics in the faculty of medicine. And then I was

given a special service inside the Hopital des enfants maladies.

Q. That's the hospital for – Sick Children's Hospital? A. The Sick Children's Hospital in Paris, which is the oldest hospital in the world.

Q. How far back does it go? A. Before the French Revolution. It started by Madame Nicair and that's the reason why it's called Nicair et enfants maladies before the French Revolution. And this was the first hospital dedicated only for children; previously hospital were mixed for adults and children. And then I was in charge of a

consultation for the abnormal children is now the biggest of the world. We have more than three thousand of children suffering from a chromosomal disease that we treat and we follow.

Q. Chromosomal disease? A. Yes.

Q. Yes, sir. We'll come back to that and the work that you did there. I wonder if you could tell us some of the degrees or honours that were conferred upon you. I understand that you're a member of the American Academy of Arts and Sciences? A. Yes, I am a member of a few academies in the world. I am a member of the Royal Society of Medicine in London; a member of the American Academy of Arts and Science in Boston; of the Pontifical Academy of Sciences in Rome; of the Royal Academy of Science in Sweden; of the Argentinean Academy of Medicine in Buenos Aires; and recently have been elected a member of the National Academy of Science in Rome, which is different from the Pontifical Academy of Sciences.

Q. And I understand that you were awarded by President Kennedy an international award given only once every three years for work which you have done with children? A. Yes, it was effectively around a few months before the late President was assassinated.

That's the first Kennedy prize, Kennedy award, was distributed and I had the great privilege of receiving the award of the late President himself. The reason why I was receiving this award is because of the discovery of the fact that babies affected by Down's syndrome, so called also mongolism, which is a mental deficiency being born, I discovered it was due to an extra chromosome.

Q. An extra chromosome. A. That is, instead of having forty-six chromosomes as every human being has, they, by misfortune, receive an extra one and this normal piece of genetic information disturb a little their ability and their mental capacity. It was the first

abnormality in man to be related to a chromosomal aberration and it was, in fact, the start of a new chapter of human pathology. We know now more than hundreds of those syndrome, and my own team, we have discovered more than a quarter of what is known in that field now. It's a new field of human pathology and of medicine.

Q. I understand that you had many other medals and awards, one even given to you by the U.S.S.R? A. Oh, that was very unexpected, My Lord. I was giving a few talks in U.S.S.R. and, by the way, I instrumental as an instrument – not on my will – on the fall of Lysenko. Because I was there, I should have spoken to the Academy of Science of U.S.S.R. and Mr. Lysenko objected. And then I gave my talk inside the French Exhibition, which was at that moment in Moscow, and all the members of the Academy of Science of U.S.S.R. came to their special talk and then they counted themselves and they found that there was a majority; and the day after, Mr. Lysenko was ousted from the U.S.S.R. Academy of Science. It's not the reason why I got the award, but the award was given because they asked me to give a general presentation of what was human pathology related to chromosome and then this was published in the Encyclopedia of U.S.S.R. and it was receiving the award of the press for the easiest demonstration of the basic fundamentals of life in man. That's the reason why I got this "Vanya" (ph.) award from U.S.S.R. which was very unexpected to me.

Q. Now that you mention Lysenko, this raises an interesting point

which I know I've not discussed with you, but which may have some interest and bearing on this case. As I understand it, Lysenko took the view that it was environment which shaped the human character and being? A. Yes.

Q. And this, of course, was in keeping with the concept that the U.S.S.R. had that man could be made over by his environment.

Could you tell us briefly the difference between the Lysenko theory, which of course exploded as a propagandist ploy on the one hand, and your view under this field? A. My Lord, I could not speak about my view. I could speak of the view of all the scientists. I was not, say, an opponent to Mr. Lysenko; Mr. Lysenko was an opponent to all science. That's the difference.

And the general theory was that given a being, no matter if it was a vegetable being, if it was a small being, this being could be modified by changing the environment. And the deep root of this general theory was that with a bad capitalist, you could modify it on good comment. That's the reason why it took over that much of the U.S.S.R., otherwise supposing that there were inborn quality of people. And Mr. Lysenko refused to believe in anything like genetic makeup, like genes, and like chromosomes. And I remember the day I arrived at that time in Moscow, I had seen big pictures which were on the walls about chromosomes, about chromosomal disease in man, and there was a fight between professors which were around between forty and sixty, and students, on one hand, who were below thirty, and old professors who were more than seventy, which were on the camp of the young students. And because their theory had been an imposed theory that Mr. Lysenko was right and the rest of the world was wrong and it's a very complex phenomenon which makes the people following Lysenko believing that there was no human nature. There was nothing like a human constitution, but only a kind of wax that you can mold and modify by social pressure and this is not the case. It happens that species do exist, that a cat is a cat and not a dog, and that is the fundamentals of genetics and it was the reason why it was so important that Mr. Lysenko was not any longer in power.

Q. Is that the essence of the debate between heredity on the one

hand and environment on the other? A. It's a little more than that. That they were not developing at all in heredity.

Q. They were not – A. They were not developing at all in hereditary traits and that they were supposing everything could be modified. And that or development of our science, we know perfectly well that for the living systems, there is an interplay between environment and genetic endowment. Obviously, if you don't feed a baby, the baby will not grow. If you don't feed an adult, the adult will starve. Then obviously our environment has to give something, but what taught us human genetics and general genetics for all the organisms, that an organism, given the possibility of surviving, will produce himself and nothing else than what he is really.

Dr. Shumiatcher: I now would like to tender Dr. Lejeune as an expert in the field of genetics, My Lord.

The Court: Mr. Sojonky?

Mr. Sojonky: No objection, My Lord.

The Court: He will be so accepted.

Dr. Shumiatcher: Thank you.

Q. Dr. Lejeune, how is it that you became interested in the mongolo child? A. Very simply, it's because when I started my medical study, I came in pediatry under the service of Professor Tupam (ph) and he was very much interested in that very rare disease.

And when I decided that I should do research, I submitted to the national Research Centre my admission saying that I wanted to study this very rare disease trying to understand what was its basic determination because I said I was thinking that if we could discover what was producing this disease, that could help quickly to understand the genetic makeup of everyone of us. And it took around eight years before I could discover really what was the basis.

Q. Now, you talk about determining the genetic makeup of human beings. What do you mean by that, sir? A. My Lord, may I be a little long just to try to make clear what is not my personal feeling, but what is the general teaching in all the universities of the world now that Mr. Lysenko is out of power. There is no difference in teaching in China, in U.S.S.R., in the States, in Paris, or any place

on this earth. When we speak about genetic makeup, it is that we are in front of an evidence that there is something written in the living matter which give to a given living matter the incentive, the direction, and the possibility of developing itself according, so to speak, a printed pattern. That is, as I said bluntly, a cat develops as a cat, a carrot like a carrot, and an elephant like an elephant, and a man like a man. Now, to understand how that kind of everyday miracle is possible, science has gone deeper and deeper in the fundamentals of life. Now, we know with certainty that it is from the junction between an ova and a spermatozoa that a new being belonging to a given species begins his career. This process of fecundation has been known like since more than two hundred years, but we did not know what was and where was written those table of the law of life.

Q. Table of the law of life? A. Yes – was discovery of the very long threat molecules of DNA, which is one metre long in a tiny spermatozoa, and carefully coiled so that it could fit neatly on the point of a needle. We know that on this thread is written, in a kind of code, three terms for one word—three letters for one word – everything which spells out all the qualities of everyone. When I say everyone, it means that this genetic makeup tells exactly what will be the colour of the eyes, the colour of the skin, the colour of the hairs, the form of the nose, the form of the ears, and even it spells out the weak and the strong – the strongness, if I can say so – of the person. And we can really say that once this pre-mortal information has been gathered, every quality which makes an individual recognizable, as he will be later caller Peter or Margaret or Mary or anything, are entirely spelled out in its own personal genetic constitution. Now, this relates very simply to the chromosomes I was referring before. Chromosomes are tiny roads that we can see easily under the microscope and they look like little sausage, very small ones indeed. Now, in fact, they are made of a very long threat of DNA, which is carefully coiled and it makes the form of those little roads. Now, to understand how it works, the best, if I'm allowed, My Lord, would be to take an example. Reproduction process are always very paradoxical because we know that what is reproduced is never the matter, but

the information imprinted of the matter. For example, when a statue is reproduced, you make a cast and at the moment that you make a cast, there is a continuous contiguity molecule to molecule between the statue and the plaster. Now, you remove the statue and you put, for example, wax under the plaster to make the replicate.

At the moment you make the replicate, there is again a very precise molecule-to-molecule contact between the mold and the replicate. But when you look at the replicate and you compare it to the statue, obviously no molecule of the original is to be found in the replicate. What is found is that the form which was imprinted by the sculpture of matter has been reproduced on the support of another matter, but what has been reproduced is not the matter because the replicate can be made on anything; but it is the form.

That's exactly the way that any reproduction process is made as photography or printing or life that and life does us the same trick. That is, we know beyond any scientific data that no molecule which was on the early human being of the parents, the fertilized egg which built the parents, can be transferred to their child; but what is transferred to the child is part of the information which was building the parent himself. So to make the thing simpler if we can, the long molecule of DNA can become part of the band that you use a magnetic tape that you use in a tape recorder. And all the genetic information is written as a DNA according to a special code just in the same way that the whole symphony can be translated into code by small chains of magnetics on the tape sp that you record the whole symphony on the tape. That is a DNA.

Now, if the tape were used just as they are, they would make knots and they could not be used. So they're carefully wound and coiled inside minicassettes and chromosomes are just the minicassettes of life. That is, the DNA is perfectly coiled so that it can be used and read without making knots and fuss about it.

Now, in human being, we have twenty-three of those minicassettes as a basis and we receive twenty-three from our father and twenty-three from our mother. Twenty-three are then carried by the sperm; twenty-three are then carried by the ovum.

At fecundation, twenty-three plus twenty-three makes forty-six; and forty-six is the basic number of those minicassettes in which

the symphony of human life is entirely written. Now, just as well as when you introduced a minicassette in a tape recorder, the tape recorder begins to give you back the symphony. In the same way, when those twenty-three from the spermatozoa, twenty-three from the ovum, are united inside the egg which is, in fact, the tape recorder, so to speak, then the whole symphony of life begins to be played according to what is written on those tables of the law of life. Then it means, without using and playing with words, that really at the very moment that the mechanism is triggered, what is played is a new human life. It's new because when we receive those informations on the minicassettes from father and minicassettes from mother, we are not receiving exactly what have our parents because each of them gives us half of what they had and they choose it on a random matter. The result is that any conceptus is, by itself, carrying a new constellation of genes which has never been produced and will never be reproduced again as such for very simply statistical consideration because the number of combinations is many order of magnitudes greater than the number of human beings which have ever lived on this Earth. So that by very simple mathematics, we're entirely sure that each of us is a specific constellation of qualities inherited which makes his own identity and that is the very reason why we can recognize a friend among a big crowd; just at one glance you would recognize your friend and not another person. It's just because his own constitution has made him a little different from the rest of humanity. So we come to a very simple concept which is, I would say, the basis of the law of life and of the law, which is that every member of our species has the same basic fundamental information which makes a human being. But everyone has a special variation around this general tenor, so that he has his personal constitution, his personal structure, and is recognizable as himself slightly different from the other themselves, if I can say.

Q. So each of us is a unique human being? A. Perfectly unique for his genetic endowment.

Q. And that uniqueness is found in, as you say, the forty-six cassettes which are the forty-six chromosomes? A. Yes.

Q. Now, these forty-six chromosomes, have you been able to

recognize them? A. Oh, that's a long story, My Lord. At the very beginning when we discovered that there was an extra chromosome in Down's Syndrome, a chromosome could not be recognized easily. They were just looking like tiny sausage. We could count them; to count to forty-six is not too difficult even under the microscope. But we could not be sure who was this particular one because we were only able to measure their length.

And inside the sausage, so to speak, there was no point in which we could recognize something. In around the year '70, a new system of recognition was devised in which we could change the colouration inside those little roads and now we can recognize safely any chromosome of the human complement and give a numeral to each of them and we give 1 to the biggest one, 2 to the second big, and so on. And in fact the chromosome which produced Down's Syndrome happens to be the 21st order, and the last one is 22;

because 'X' and 'Y' which are the chromosomes who produce the sex difference in our species are not counted by numbers, but just by letters 'X' and 'Y'. This has been a very great change because I remember around fifteen years ago, there was evidence when looking at the chromosome of the Primates – I mean, orangutan, pongo, and gorilla – there was an evidence that they were looking a little like human chromosomes.

Q. They were looking a little – A. They were looking like the human chromosomes, but not entirely. But the difference was difficult to measure, but for the number. They had forty-eight chromosomes, all those three big apes, and we have only forty-six. And this was accepted with great reluctance by human geneticists to recognize that man, who is the king of living system, was having two chromosomes less than big monkeys. We have solved that dilemma, My Lord, and now we know the reason that, in fact, in man we have one chromosome, the number 2, which represents the same material that two different appears in the apes. That is, they're hooked together in our own species to form a one chromosome much bigger – chromosome number 2 – much bigger than the two counterparts which are found in the apes.

And by the way, that has given a very deep connotation to the

study of the chromosome to understand what species are because we know now which make up the species. For example, if we look inside the chromosome with the new techniques in which we can see tiny bands inside the previously uniform sausage, we can now recognize nearly nine hundred bands in the human chromosomes and in the apes chromosomes. Then we could demonstrate, with my former student, Dutrio (ph), who is now Director of Research in Paris – we could demonstrate that it was the way in which those bands were located, one close to the other or one far apart to the other, which defined immediately what was the organism carrying this particular chromosome. For example, around fifteen years ago, looking at the chromosome of the gorilla, a student would have had difficulty to say with certainty this is a gorilla and this is a chimpanzee, for example, if he had to compare those two species. He would have said it's not man because he would have counted the chromosomes and found forty-eight in the case of an ape and forty-six in the case of a man. But to make the difference between a chimp and a gorilla, he would have got in trouble. Now, since '70 and '71, we can recognize safely those tiny bands inside the chromosome and if one of my students was making a mistake and taking a chimpanzee for a gorilla, he would fail in his examination. That proves how simple it is. If you just have the map, you can see that is a gorilla chromosome and that is a chimpanzee chromosome. So that we know now with those refinement of techniques which are, in fact, a viable science around ten years as a well-established tool, we can recognize each human chromosome and every one of them. We can recognize each chimpanzee chromosome and every one of them. And we can safely tell apart, from just looking at their genetic makeup, what is coming from a chimpanzee being, from a gorilla being, from an orangutan being. I don't speak about other animals which are much farther apart from man than those big apes. That makes the study of the genetic makeup very simple, very objective and entirely under experimental control.

Q. This recognition of chromosomes of different species and different chromosomes of each species was a breakthrough, I think you said, in the last what? Ten years? A. Around the last twelve

years. It began twelve years ago and it's ten years ago that it began – when we first described it in Paris, there was some reluctance to be accepted and it took around ten years so that it could be demonstrated in many other laboratories and now it's, let's say, something as a textbook. It is nothing new any longer. It is an established fact in every textbook.

Q. Has this changed the perceptions of life insofar as scientists are concerned; that is to say, as to the nature of the life? A. I would not say so, My Lord. I would say that it has confirmed all the fundamentals of life which were already known before and it has deepened the demonstration of it; but in fact, it's just in accordance with what was known for more than four centuries that a given couple can only reproduce member of its own species. That was the main discovery of Rene Descartes. One is showed that no case of pregnancy in man was producing hybrids between animals and man. It was previously suspected that some, what we would call now, malformations were in fact resurgent of an ape-like man of a cow-like man, of a frog-like man; and that was Descartes who postulated on purely logical ground that because there was no homunculus at the beginning, that there must be laws written on the matter which define the species. It was a purely logical statement which was coming from Aristotle, in fact, but he was the first to use it definitely and saying it is impossible that amidst the living system, half man and half animal could exist; and that has been accepted by biologists as a fundamental logic to explain all the facts of life. Now that we know the chromosome, now that we could look at them – and you know what is good was the methodology – that it reassure yourself. You have methods of reasoning, you are sure of the logic; but if you can look at it on a methodological ground, now you are very safe. You can see a picture and that helps intuitively, but that does not change the reality. So the reality was known, but since, I would say, the last fifteen, twelve years, the amount of demonstration is beyond any possible doubt.

Q. As a result of this research, has there been any – have there been any new perceptions developed as to the beginning of life?

A. I don't think, My Lord, it has been new. It has always been

known by people thinking about the facts of life, that life was like everything. It was beginning at its beginning. But it has been very enlightening in the discussions which have been running for the last

twenty years about a very curious phenomenon which has occurred in the general perception of science. Previously, I would say fifty years ago, no scientist was questioning that the thing which was growing inside the womb was obviously a member of our species because they were sure it was not a tumor; there were sure signs it was not an animal; and if it was growing to get the human form, it was obviously a human being. But because of this, I would say, inborn feeling of life was not agreeable to the people who wanted to make a grey zone around the beginning of life so that you could eventually dispute what kind of thing was growing there, that there has been, I would say, an obscurity suddenly invading not science, but the expression of science and its perception by non-scientists that maybe we did not know really what was going on in the beginning. And that is very interesting, My Lord, because it's purely psychological. It has nothing to do with the knowledge that we have severally about what are the fundamentals of life. But it has to do with the fact that some people, because they have intention about this new human being, would be – would agree better if we did not know so much about its own beginning. Now, the

question has been often asked, "When does life begin?" And some people have answered that life continues; it never begins, but it began around four billions of years ago. That's very true, My Lord,

that life began around three billion years ago, but it's perfectly untrue that I have begun four billion years ago and it's not true for all professors of genetics. But it would be very impolite for all the feminine persons that have the most precious part of humanity to tell them that they are billions of years old. Any individual is not all

of a billion years. It is just the number of years that he has lived since his own beginning. And we know that each individual has a very neat beginning which is exactly the moment at which the

whole sufficient and necessary genetic information to define himself has been gathered together. And we know that the process in which this whole necessary and sufficient information has been gathered is at fecundation because we know that it is the only moment at which information coming from father and information coming from mother united together and we know that later on after this fecundation has taken place, there is no other input of genetic information. That was opposed by all the laws of fundamental genetics, but now we have the experimental demonstration of it with in vitro fertilization, but maybe I'm going too far.

Q. No, you're not at all. You've certainly answered the question which, I take it, is that the life of the individual begins at the time when there is present all of the genetic materials which that individual will have for the rest of his life. Are there changes that come about to those materials in any way? A. Normally, if everything goes well, there are no changes. But changes can occur and produce diseases. For example, all our cells of our body have the same genetic makeup, the same chromosome structure all around in every cell of our body. But sometimes it happens that two chromosomes cross between each other. A part of one chromosome may transfer to another chromosome and if that accident does occur in specific sites which are related to immunology – I would not go too deep on those technicalities; they're of the last year of discovery- it can produce a cancer, and a cancer cell is a cell which has made a mistake in the reproduction of its own genetic makeup.

Q. What word did you use? It is what? A. A mistake, a mutation.

We call it a mutation. And that, for example, is an exception to the fact that the genetic information which is in all our body is a correct transmission of what was written in the first cell from which

we have emerged. And that produces various diseases like, for example, cancer. But in the normal course of development, normally if no accident intervenes and if the surrounding is favorable, the whole development will be made according to those

– the genetic makeup of the very beginning so that we are not cameras. We are uniform individuals and we owe our individuality essentially to this particular genetic endowment we have been granted with at the moment of conception.

Q. We hear a good deal, Dr. Lejeune, about DNA's and RNA's and the fact that these are sometimes said to be building blocks of the human being. Can these be detected through life and examined and analyzed?

A. Oh, yes, very easily, and we can very easily with good techniques

to acquire specialized people, but it's very feasible to extract a segment of a chromosome and to have the formula of the DNA, that is in fact the information written in this magnetic tape, and we can really do that and recognize that it is the same sequence in every cell of our body. Now, if we check for a specific disease, we can see that there is a mistake on the spelling of this DNA formula which is specific of that disease and this mistake is present in all, every segment of DNA, we get from skin, from bone marrow, or any part of our body. So again, with pure chemistry, we can demonstrate this unity and this uniqueness of each individual. That's not pure theory. It's demonstrable experimentally.

Q. I take it from what you say then, we have present DNA's from the start of life and these persist and can be discovered in the human body in the same form, unless they have become diseased, throughout the whole of the individual's existence; is that the position? A. That position is perfectly correct, but I would not reduce life to DNA no more than I would reduce the – what I could say – Die Kleine Nacht Musik from Mozart. I would not reduce a Little Night Music of Mozart to the tape band of the tape recorder.

That is, in order to listen to The Little Night Music, I should have both a recorded tape and the machine to read it; otherwise the tape band will remain silent. That is really what life is, that we cannot say that DNA, even with all its coded information, is living. It's a molecule. On the other hand, if we had only an egg without the information, the egg would disassemble very rapidly and be destroyed because it would not be governed by this information. It's only the togetherness of the information and of

the tape recorder which makes the music possible and it's exactly the same in life. It's only when the DNA information and the whole machinery to read it, which is inside the fertilized egg, is simultaneously present that life – that the symphony of life can be played and is playing itself.

Q. Is there, in your view, any essential difference, other than growth and volume, between the material which is in the first fertilized ovum and the human being as he grows larger in his mother's body and beyond? A. There is an obvious difference in kilograms, in volume, and also in the property that this growing human being can progressively exhibit. But if I could take an example, My Lord, I would say that at the very beginning in the fertilized egg, man is – if I speak the language of geometers, of algebraists – it's reduced to its simple form. When you have an algebraic formula –

A. A which? Algebraic – A. An algebraic formula, you can read it, for eloquence, on the most concise terms. For example, 'F' of 'X'. Now, if you want to know what it means, you'll have to expand the formula and it's the thing you can make by handwriting a very long, cumbersome formula or of putting the whole thing in the computer which will make the whole calculation for you. Then with a very simple three-terms formula, like 'M' equals – like energy equal mass by the square of the speed of life, which is 'E' equals 'MC' square, you can define a very big part of the universe. You have reduced it to its simple formula. But to use it, to know what the speed you should use to have a rocket going to the moon, you have to expand the formula. Nevertheless, it's on the expansion of this basic formula which gives you the ability of calculating the parabola around the star. It's exactly the same thing in the living system. At the beginning, the whole information is reduced to its more elegant and most simple form; and what does lie in the blossoming of the individual is just to expand the formula in all the possibilities asked. Now, evidently with the mammoth of information which is written as a DNA, the formula is much, much more complex than the Einstein formula for the general

relationship between energy and mass. But, in fact, it's just the same phenomenon of expanding what is, in fact, as a fundamental information written of the basic formula.

Q. Some people ask the question as though it were the alpha and the omega of the whole of life as when does life begin. How important is that question or the answer to it, Doctor? A. As I told you previously, My Lord, life has begun very long ago. It has a very, very long history, but each of us have a very small history in time; no more than some hundred years. And because we know that, we know that if we can live a hundred years, it means that there was a beginning to those hundred years. And this beginning is again – I repeat myself, but I'm obliged to do that – it's again the time at which all the genetic information necessary and sufficient to build everyone and each of those everyone was gathered and that is at fecundation.

Q. And I suppose the same principle applies to the beginning of a mouse or – A. Oh, perfectly true. The same thing is true for a carrot, for a whale, for an elephant, for a cat, for a mouse. And by the way, I have never heard any discussion among scientists to know when a cat begins, to know when a cattle begins. Everyone knows that a cattle begins at the fertilization of the cattle egg by a bull sperm and nobody is discussing about it. I can hardly understand, on purely scientific ground, why, when it's man who is in question, the things are not that evident. There is, just as plenty evidence for us as for every living individual.

Q. Nobody much wonders about the 'mousification' of a mouse then? A. I have never heard about that. And for example, we know that when the ovum of a cattle, of a cow, has been fertilized by a bull, a cattle being is beginning its career. And I have never heard about 'cattlization' of a cattle.

Q. 'Cattlization' of a cow? A. Of a cow. It has never occurred to the mind that they were an animal. Those people know that it is a cattle beginning because if it was not, it would never become a cow.

And in that respect with due difference between a woman and a cow; because I am a doctor and I see the difference, I must say that there is no difference about the beginning of them. They begin at

the very same start point with a basic difference that the human being has a human genetic endowment at the beginning, and a cattle being has a cattle genetic endowment at the very beginning.

The difference is in their nature. The difference is not on their way of beginning. They begin just the same.

Q. You were talking about cattle beings? A. That's an interesting phenomenon which is rather recent because previously, husbandry of cattle was made by raising special bull very specially selected because they could produce very beautiful and agreeable to eat cows

and giving good milk and so on. And so you had to have a cow for the bull, to be inseminated by the bull. With artificial insemination,

the selection process could be more stringent because a bull could give a lot of sperm; the sperm could be conserved – preserved out of a special means, and so that it could inseminate an enormous number of cows. But the thing I'm going much more deeper was the discovery of in vitro fertilization which was made long before in cattle before it was made in man. And with that, it's possible to observe the very early cattle being, if I can so speak, and you take an ovum from a cow, you put it in a vessel with a special fluid, you put the sperm of the bull, you see the fecundation process under the microscope, and this tiny cattle being begins to divide inside his zona pellucida, which is a kind of plastic bag which protects it. Now, because we know that all the genetic endowment is just determined at fecundation, the specialist on husbandry were able to say, now, because I know the sperm is coming from this given bull and that the ovum is coming from this given cow, I can tell that this tiny cow being will develop as a member of this race of cattle.

And because, as you know, we have in France a very nice mutation which arose in cattle, which is called the Charolais, which is very good because he had big muscles on the back so that you have very good steaks out of it, people were interested in America to grow those Charolais cattle. It's a difficulty to ship them. They're heavy animals and it cost a lot in the travel. But because it was possible to have those tiny cattle being – now, after fecundation, the cattle being is around one millimeter and a half in

dimension. It looks like a little – a little, very, very tiny dot of living matter. It is possible to ship it as it is; and to ship it, the easiest way was at the beginning to use a rabbit because rabbits have tubes, fallopian tubes, in which normally the early embryo is living, and the early embryo is living in the tube freely floating in the fluid for every living mammals. It's the same thing for all the mammals. So that you could put those tiny cattles inside the fallopian tube of the rabbit and you could ship inside the rabbit around fifty cattle, fifty cattle beings. Now, arrived at destination, your actual air freight is much easier than sending fifty pregnant cattle, fifty pregnant cows. Now, you send the rabbit and when you are at destination, with a very tiny syringe you very carefully remove, one by one, all those tiny cattle beings and you insert them inside the uterus of the recipient cow. The result is that around nine months later, a calf comes out of the recipient cow and this cow has all the genetic endowment of his genetic parents and he has received no information whatsoever from the rabbit, which was the temporary recipient, or from the foster mother cow, which has nurtured him during eight months. There we have the demonstration that the genetic makeup of this cattle being which was fertilized in France and sent by plane inside a rabbit and inseminated in an American cow has kept all his own Chaolais information and has not been changed either by the travel or by the change of species during the time it was carried by the rabbit or by the genetic endowment of the recipient cow. And that is so true, My Lord, that now when you comment for one of those tiny cattle beings you receive it was special recipient with a special guarantee; and on the guarantee, it is written that it is a Charolais cattle being and if eight month later you don't get the right brand of Charolais being, you will be reimbursed. And that is, I would say, a very simple financial demonstration of the security of the fundamental law of life. It's not a matter of merchant trick. It's the merchant can use that guarantee because they know that the law of genetics will not fail.

And if they say this is a Charolais tiny cattle being, they are sure of what they say and it's what it come out.

Q. Now, in that illustration, Dr. Lejeune, I suppose there is no doubt that Mrs. Charolais, when she parts with that embryo, knows it's not hers anymore. It's shipped in the rabbit to some other Madame Charolais in Canada or the United States. When that embryo grows, is it part of the second Mrs. Chaolais or is it a separate entity or separate life? A. It is entirely a separate entity.

I would say it's a separate being because it develops itself according to its own law of life. That's the reason why it has a shape corresponding to his own genetic endowment and not the shape of the foster mother, so to speak, foster cow. And that is a very, I would say, simple and experimental demonstration; that, in fact, the recipient female in the case of the cow is just giving environment, fluids, nutrients, which are necessary for the metabolism of the being, but is not modeling, is not forming, is not giving any information to this tiny being.

Q. Supposing that that embryo that comes from Mr. Charolais in France comes over to Regina and is implanted in the uterus of Mrs. Holstein, not a Charolais, what will the result be? A. A Charolais.

Q. Not a Mrs. Holstein? A. Not at all. It would not have any of the specifications, coat colour, and milk production, general behaviour, of the Holstein, but of the Charolais. It will not have been in France at all by the genetic endowment of its nutrient mother.

Q. Now, can you apply that principle to the human child in the body of his or her mother? A. There is a little difference, I would say, between a cow and a woman and I want to make clear that there is no mistake in my own mind about it, too.

Q. I'm glad you said that. I want to assure your safety out of Regina a couple of days from now. A. Because there is something extraordinary about the mother – I speak about a human mother – that, on purely physiological grounds, she is just a recipient like a cow mother. She's just supplying fluids, shelter, good temperature, and good nutrients to the child growing in her. But the bewildering phenomenon is that a mother knows that she's carrying a human.

And Mrs. Holstein, as you were speaking about, a cow, does not know she is carrying a tiny cattle. She does not know anything about genetics. She has no feeling about being pregnant. She is pregnant. But the difference in our species is that human beings have developed a feeling of knowing what is a member of their species and any pregnant woman knows that what is growing on is not a thing, is not a cell, is not physiology. It's just her own child. And that makes the whole difference in the world between the cattle and the woman. It's the very reason why I don't make – I make a difference between them.

Q. Of course. Well, then the mother – the human mother, of course – as you say, provides certain nutrients. Is the mother something like an incubator, among other things? A. A little like, but a very complex one. We have no equivalent of a uterus as a machine. We have not yet invented a fluid supplier in which an early embryo could develop itself, anchor itself and continue its growth just by receiving minerals and molecules for its growth.

But we have an equivalent and that the equivalent I would use if I'm allowed, My Lord. It's a little out of my own field and it's even outside the field of ordinary gravity. That is the equivalent of an astronaut.

Q. An astronaut? A. An astronaut. When we send man outside around the earth, we have to give him supplies in a space capsule so that in that space capsule is reproduced all the conditions: temperature, breathing air, environmentation, nutrients, which they could have on the earth. Because if they were sent just naked into space, they could not survive. Now, the interesting phenomenon is the following: that inside of these space capsule, the astronaut is perfectly viable. He can make a lot of interesting scientific observation and he can pilot his own capsule and do all that they do. Now, when he wants to go outside of the space capsule. He has to have a space suit so that he could receive from the space capsule enough fluid to fight against low temperature outside, enough air to breathe, and even to the food so that he can survive. And at the moment he is outside and walks into space, so to speak – we have seen again very recently with the space shuttle, people walking in the space shuttle having their space suit and doing a lot

of things around the space shuttle – they're exactly in the position of the child inside the womb because they're living – the astronaut is living by his own virtue because he has the genetic endowment of a man. But to survive, he has to receive the nutrients from the mother ship. Now, curiously, when the specialist first started to think about this space suit so that a man could walk in the space, they were considering what was the most advisable way of having the tubes coming from the space ship to the space suit and how to put them on the space suit and they did a lot of calculation and the end result was that the tubes should be fixed on the belt buckle. That is exactly where the umbilical cord is fixed on a baby, on a child in utero, because it's the best way so that you can see what – you are free of your movement – but you can at every moment be sure that your umbilical cord or do your fluid supply is coming to you. And then it gives us the very evident difference between the ability and the environment: a man on the moon is perfectly viable if he is inside a space capsule and if he receives all the necessary fluids. Now, if you stop the fluids, if you do not – does not receive anything more, then he will die. That's exactly the same with the child in utero. If he receives a nutrient from the mother, he will continue to be himself and build himself and live as himself. But if he's deprived of this refueling, he will die. But he is just as viable in utero as an astronaut is viable on the moon. The question is only that he receive enough vital supplies from the mother ship in both cases. Now, on the same way that I don't feel that in the Goddard Centre in the United States in which they control all what is going on with the man walking on the space, nobody will take the decision of cutting the supply of fluid to the astronaut; exactly on the same way, it's not possible to suppress the supply of fluid to a child without killing him.

Q. So that anyone that is in charge of ground control over a space ship or an astronaut in the air would have a duty to preserve the life and not turn off the source of sustenance; is that your position? A. Well, my position goes deeper than that. I would say that astronaut on the moon is a child of the N.A.S.A. because he has to live in

this perfectly protected environment, otherwise he dies. That is exactly comparable to the child in utero, and is not on the moon; is, so to speak, an ordinary human being because no ordinary human being can survive on the moon. They have to be protected in a special environment. And then I would say, strictly speaking, that the astronaut is, in fact, a child of the N.A.S.A. and N.A.S.A. has to provide him with a means of survival and that is the reason why nobody in the N.A.S.A. will close the faucets which give him the means of living because he is totally dependent for his survival on those supplies. So technically speaking, he's a child of N.A.S.A. and apparently N.A.S.A. is more than like enough not to kill his own children.

Q. N.A.S.A. being ground control? I mean the ground; the lady who runs all the computers and calculators and the facility for space travel.

Dr. Shumiatcher: Does Your Lordship wish to take ten minutes? This might be a good time.

The Court: Yes, all right.

Court adjourned at 11:20 a.m., May 12, 1983.

Court reconvened at 11:30 a.m., May 12, 1983.

Q. Dr. Lejeune, you have dealt with the early beginnings of the individual and most people know about newborn children and what a newborn child looks like and how it generally acts. Are you able to tell us just how it is that, from those tiny beginnings that you spoke of, the child that all of us can recognize appears as a newborn in our world? A. Well, it's a very general question, My Lord, and I would take it from a very broad point of view. That a basic fact about life is that a human being is never finished. It's always beginning more and more himself. For example, a newborn will become a schoolboy or schoolgirl. Then from the schoolboy we will have a young adult, as a woman or a man; and later we will have a senior citizen, and a very old one. And a man is never finished because common language has taught us that. For example, the best – the worst qualification about a man is to

be 'he is finished.'" It means that it's a terrible condemnation. And even if you give him capital punishment – coupe de grasse – with a pistol, you say he has been achieved.

Q. He has been – A. – achieved. A man is never achieved during his life. He's always becoming more and more himself and that is true for in the life in the outside world. But it's true also inside the womb and that what makes this extraordinary, obscure life story live, if I can say so. Everybody has an impression and a general feeling of what a newborn is. He is a tiny human being who cannot speak, who cannot express himself more than with some cries when he has discomfort, when he wants food; but nobody questioned that a few years later, a year later, he would say "Mom" and "Dad". A few years later, he will say, "I am Paul" or "Margaret" and a few years later he will be allowed to vote and to be useful member of the community. But now, let's go backward from birth to his own very beginning. I do not want, My Lord, to show you very complex demonstration and pictures because it's not necessary. I would refer to very common knowledge and, for example, the one which was published in Life Magazine because it's available to everybody. It has nothing to do with textbooks of genetics, but the picture speaks for themselves. When we look at the newborn, we can figure out that he is just a tiny human being of, let's say, fifty centimeters long, but what he looks like one month earlier. One month earlier, he looks like that. It's just the same baby, a little smaller, and just moving around inside the womb and just continuing to grow. Well, before that, a month earlier or another month earlier, when he is only, let's say, seven months old in utero, he is already, so to speak, able to live by himself. If early delivery occurs at seven months, the survival, if proper attendance is given, is very, very great and the child will not suffer very much of having lost two month of maternal shelter. Now, if you come at six months, he is just able to live on the outside world, but he is not that strong. So you need more careful incubators and technicalities around him. The earliest survival with a perfectly normal development later that we know is around the fifth month of pregnancy; and in that case, most of the babies would have

difficulty to survive, but those that could survive would survive perfectly normally. Now, to my actual knowledge, due to technical difficulty, medicine is not able to allow the life outside the womb to a human being of a four months of age. But that does not mean that he is not viable because inside the womb he is perfectly viable. He looks a little like that. He sucks his thumb, he's playing around inside the womb, and he is full of joy and youth, if I can use the word. And if we go backward in the time, let's come to the earliest time at which everybody not having seen previously any tiny human being would, at first glance, say, "It's still a little member of our species." This time is around two months of age. At two months of age, the human form is that developed that nobody, having seen it previously (sic), would make any mistake between a tiny chimpanzee, a tiny gorilla, a tiny orangutan, or a tiny human, with no knowledge whatsoever about zoology. For example, just looking at the foot, the foot is a human foot and you can see the tiny toes and the whole form is already immediately recognizable. Now, at that time, the little guy is not very big. If you measure him at two months of age from crown to the rump, he is less than one thumb big. If you had – if I had such a baby in my hand, in my fist, you would not see it that I have something in my hand because it could fit very easily inside a nutshell, very easily. But if I was opening my hand, you would see the tiny human being. Not only the feet are perfectly recognizable, but the hands, but the face, and the whole body is constructed; and everybody just looking at him, who has no knowledge, would make no hesitation recognizing him as a tiny member of our species, very young indeed, but with no doubt at all in any mind that he is a member of our species. Now, if you are a little more of a specialist, you could possibly open the hand of the baby because very often they have their fists clenched and you could look at the palms. And on the palms you would see – I'm still at two months of age – you would see the creases of the skin and, with a good magnifier, you can see little dots on the palm and those little dots correspond to the ridges. If you were looking at the fingers, you would be able to detect the fingerprints. You would need a good microscope to do that, but those fingerprints are already there and

they will not change for the rest of the life. That's the reason why they can be used to establish identity cards and that the fingerprints are used by the police to recognize people because those features never change during the life. Now, if you were looking at those features in a baby of two months of age and having a tiny picture of it, we could recognize the same person eighty years later and we would see the palm prints have just enlarged like enlarging a picture, but that the pattern is exactly the same and is entirely specific of this very person. And then just looking with a simple thing like a good magnifier lens, you have everything at hand to give to this tiny human being his national identity card. Everything is there to say it's a man, it is a woman, and to recognize its physiological entity. By the way, if you were a fortune teller, you would look at the palms and tell the good fortune of this tiny person, but that is not pure science, My Lord; it's outside my own field. Now, what happens if we were looking at the same person, the same child, earlier in utero before two months of age? I think the pictures will give us a very simple outlook that that's a baby of eleven weeks and that is a baby earlier at six weeks and a half, that is, before two months of age. At six weeks we would recognize that the head is entirely made, that the cerebrum is entirely information in place, that he has already beginning the hands and the feet. They are not entirely sculptured definitely, but they're already there. Now, if we go earlier even in the life of this very person, in fact we are running the film of life, the symphony of life, backward, that we would see him when he is very small. He is now six weeks and we can see, viewing from the back, that he has all of the crest which produces all the nerves which will innervate all of the body. And he is just now growing the hands and the feet. Now, if we go earlier at one month, the picture becomes more difficult to understand for the layman and that is not surprising. I would take again an example. When you want to know what is a symphony, you have to listen to the whole symphony and at the

end, you say, "Well, I have listened to The Little Night Music." I like very much The Little Night Music. But if you are a mellow man, a music lover, you don't need to hear the whole Night Music to understand it because as soon as the music begins at the very first bar, a mellow man would say, "Oh, that's Mozart," and at the first bar, it would tell you the opera. That's exactly the same thing with a symphony of life. The non-specialist needs to hear the whole symphony to see the whole development of life to tell, well, it's a life of a human being. But the specialist recognizes it at its first moment exactly like the music lover recognizes Mozart at the first chord. And those first chords are really the fundamentals of life that I have tried to expose to you with all those analogies.

That is, the shape, the progressive sculpture of the organism starts from an apparently undifferentiated cell, the fertilized egg, which divides feverishly and progressively composes a kind of berry-looking like being; and secondarily, inside the berry, some part differentiates to form the first neural crest. That occurs around ten days after fecundation, between ten and fourteen days. And then it begins to make a tiny tubes which begins to beat, which will be the heart, and it does that at twenty-one days after fecundation. And it continues to put in place all the organs so that in one month everybody would recognize it's a tiny mammal, but would not be entirely safe – I speak about somebody who has never seen it – would not be very clever to tell what kind of mammal it is. And then after two months, everybody recognizes the little human being small than a thumb. Now, it has taken a lot of work, a lot of cleverness and of apparatus, to invade the privacy of the tiny human being inside the uterus. For example, I think Sir William Bailey has talked about that. We have the possibility of hearing what is going on inside the womb, of knowing whether the baby feels something, some pain, some taste and so on. And for example, if you put a bitter substance in the amniotic fluid in which it's swimming around two months or three months of age, it does not like it. He has already a little taste possible. If at four months of age there is a big noise like slamming a door, the baby will be surprised and quicken very rapidly. But in fact even at two months and even at one month of

age, that is when he has – let's say at eleven weeks we are entirely sure now and probably a little earlier – he can freely move and in fact, if I can say so, dance, dance inside the womb. This has been demonstrated very recently a few years ago by a very refined imagery by Mr. Ian Donald, from England, and he used to look at the baby in the womb, the same trick as the Navy is using to look at the submarines; that is, to send ultrasound and from the echo you receive, you build a picture on a kind of radar. And he was able to show that a young lady of eleven weeks of age was dancing and that is a very peculiar dance. At that time, the baby is relatively small compared to the size of the amniotic bag in which he is protected. By the way, he has constructed himself the amniotic bag and it's not at all mother's tissue; it's the production of the baby himself, he produces this protective bag. And inside it there is the fluid and because the body of the early child is containing a lot of water, the child has relatively the same buoyancy as the fluid so that is, so to speak, not feeling the gravity.

And then he has a slowness and a gentleness of movement that you cannot realize on any other part of the earth. And for example, he has his leg flexed and the hand flexed and suddenly he pushes on the legs and he'll rise slowly with the hand rising like that and he does it exactly at that speed and then he rises inside the bubble, then he comes at the top of the bubble with his hands and then he falls down gently and he does it just like a baby playing on a trampoline, so to speak; but he does it in a very elegant and very easy manner that nobody can do but a baby in utero. When I say nobody, I'm not correct because even grown-ups can do that, but they can only do that when they're outside of the gravity of the earth. So that only cosmonauts in their space capsule can again have this gentleness of motion and this elegance in jumping. And it was for the biologist, I would say, a revelation to see that those two ends of the human abilities – the one that each of us has got when we were in the womb of our mothers and the one that the astronaut can have in this space capsule – can give this elegance and this gentleness of movement. And again, it's reinforced just by looking at the very fact this analogy is used between the astronauts on the moon in his space suit and the baby inside the womb. They are the two only

situations for human beings in which you can really play trampoline very elegantly. And these things, full of youth and full of joy, it's a very refreshing input of science. I would say very refreshing, but not new. These things have always been known, not by scientists; nobody else knew that a baby could dance at eleven weeks before three years ago, none of us knew that. A quickening was supposed to arise at around four months in pregnancy, between four and five months. It was expected that they should move because they had already their nervous system, but we had not seen it. But what is curious is that the heart, the deep feeling of the mothers knew that, so to speak, intuitively. That is, I guess, the reason why the folklore of every country has at least one story in common, which is the story of Tom Thumb, the little man smaller than a thumb. And if this Tom Thumb story has been told by every woman to every child in every part of the world, it's this very, very simple reason; that the Tom Thumb story is a true story. Science tells us that now, but the feeling of women had discovered it long before. And I will try to help you to figure out what was that life that all of us have lived that we have more or less forgotten, but not entirely. Tom Thumb is always said to be living in a kind of underground country in which marvelous things are happening which cannot happen in the outside world. And it is very true that during this obscure life of us, we have enjoyed kinds of pleasures that we do not find now we are grown up; but that we can still find again in special situations. For example – forgive me, My Lord, if I take a very simple example, which is the example of a discoteque. Maybe you have been on a discoteque and to go on a discoteque, you have to go underground and you come under vaulted shelter where is a red, very dim light. The atmosphere is hot, sweaty, and there are people there slowly moving or very rapidly jumping and there is a terrible noise inside, a very strong noise which beats at around sixty per minute, which is a counterbass, and every time with a big sono (ph), you feel that your chest is moved by the beating of the counterbass and there is a very rapid cadence of the maracas, which are around a hundred and fifty, a hundred and seventy per minute, and which makes

your head vibrate. And every pop music, every disoteque, is based on those two basic rhythms. And the surprising thing is that apparently people do like that. Why? It's because, in a sense, they unconsciously remember there has been a time in which they were in a vaulted shelter with a very red dim light and there was again this very primitive music. One was the reassuring hammering of the heart of the mother around sixty, seventy per minute; and the other was the beginning of the career of their own heart, who is running at a hundred and fifty, hundred and seventy. And if we look inside the uterus, we can see that the thoracic cage of the baby is expanding and compressed by each hammering of the heart of the mother; exactly you are in a discoteque with a big sono (ph) effect. And also the head of the baby is vibrating at the cadence of his own heart and it's not a surprise for the biologist that the most primitive music – that is, a tap tap – is always made with two rhythms: one big, low voice one; and one high pitched rapid one because it's a symphony of two hearts which is the earliest symphony any human here has heard, that every one of us have heard. And I would say the genius of the musician is only to have remembered this past symphony and it's the reason why it's not considered as a very sophisticated music because it is the earliest music that the human being can feel. But it has been a kind of remembrance of this very early life of us. If I say that, My Lord, it's not to make use of a kind of pseudo-poetry. It's because it's deeply rooted in the human nature to feel that babies in the womb are really babies and we have still that memory, we grown-ups.

And it took us scientists an enormous amount of work to realize that, to demonstrate it, to exhibit it openly with apparatus, imagery, and hydrophones, and all those recording systems. But what is for me, I would say, an object of admiration, is that woman, without any knowledge about genetics, had already known intuitively that story and they invented the Tom Thumb tale just to make a very simple way of sexual education of children so that they know what is the country they are coming from, which was the womb of their mothers.

Q. That's a beautiful story. A. That's a true story. It's not a story; it's nature.

Q. Thank you.

Dr. Shumiatcher: My Lord, I should like to tender as an exhibit this issue of Life. It's part of the educational series of Life, probably several years ago. This is reprint Number 27 and is indicated as Life

Before Birth. I wonder if I could tender that as Exhibit P53.

Clerk of the Court: Fifty-five.

Exhibit P 55: Life Magazine Educational Reprint 27 entitled "Life Before Birth"

Q. I'm also showing you, Doctor, three photographs or four photographs. The first one –

Dr. Shumiatcher: These photographs, My Lord, appear in a Pleading that was filed in the United States Supreme Court in 1972 and I'm just leaving them in there. It's a Petition for Rehearing in 1972 of a case there. And I came across these photographs which I'd like to show to Dr. Lejeune.

Q And the first one, can you just indicate for the record what these are, Doctor, and whether, in your view, they are a good representation of what they are stated to be? A. The first one is a picture of a two month of age fetus, two months after fecundation. It's the calculation we use. Fecundation is the starting point and two months later we look at the baby. This is a perfectly correct reproduction of what the baby is looking like at that time. Now, I did not mention, My Lord, that we have demonstrations that at two months of age, nature has already provided a filling on the upper lip because the building of the nervous system is made so that everything which is needed first is built first. What is needed first after birth is that the baby can suck, can suckle. And then in their embryonic life, the moutage, the building up, of the nervous system starts with enervation of the lips, of the tongue and of the muscle there, so that it is ready long before the baby is born.

That's the reason why at three months of age it begins to suck its thumb because he has already the neurological mechanism of sucking long before it is needed. And that has been found – was a very great surprise that a baby of two months of age who can swim or play trampoline inside the uterus is also able to feel something.

And particularly because the person is very tiny, you can use a

hair and push the hair on his upper lip and at two months of age he's already able to remove his whole body to escape the stimulation. But if you were doing it at three months of age – that is one month later – the mimic of the tiny baby is extraordinary because he begins to squint, looking at what is going on on his lip and then he closes his eyes, he closes his mouth, he clenches his finger, and removes himself with the behavior of distaste. And after awhile when you have removed the hair, he begins to be happy again and – how do you say – he consoles –

Q. Consoles himself? A. He consoles himself with a good mouthful of amniotic fluid and he swallows a good mouthful and now he feels better. And that shows us that in this early life, part of all the reactions we will see later in life are already available to that tiny child.

Q. And Dr. Lejeune, I'm showing you another photograph. Can you tell us whether that's a fair representation of a fourteen-week human? A. Well, those pictures have just the normal quality and they give the evidence that's always known that after two months of age, it's only a matter of growing. He grows bigger and bigger and bigger; he does more and more and more. But it does not make for me any difference than to show me a picture of a newborn and show me a picture of a six-month old baby, one-year old baby, ten years old baby. I know that it is his normal growth.

It's just a confirmation that a man is never finished until death.

Dr. Shumiatcher: Perhaps I could tender this booklet then for the purposes of the pictures. I've clipped the sheets forward and Your Lordship will have no difficulty in seeing what we're marking. P 56.

Clerk of the Court: P 56. Exhibit P56: Coloured photographs in centre of booklet entitled "Petition for Rehearing"

Dr. Shumiatcher: My Lord, the witness, Dr. Lejeune, has mentioned Dr. Ian Donald, who produced a film in England of a child that is dancing in utero. It was our hope the Dr. Donald would be here, but he's ill and can't travel, but he has sent us the film along with an affidavit which I'd like to read and then I'm going to Q Perhaps I should first ask Dr. Lejeune whether he is familiar with

the film "Jumping for Joy" that Dr. Donald did, I think, several –

about a year ago? A. A year and a half.

Q. And are you familiar with the film? A. I am familiar, My Lord, with the first film; that is, a technical film before it was made a mounting of it and he presented it in England – it was in Leeds – and remember that it was a great impression for all of us because we had never seen that. Now, the film is difficult to interpret because you need to have the habit of looking at a radar system; and most of us, when we go to the movies, are not looking through a radar screen and that makes a little – you have to accustom your analysis of the picture that is a radar picture. But otherwise, you can really see the baby dancing, as I said, and what I said was just trying to describe what you can see of the picture. If you want to project it, I could try to tell you what is to be seen on the screen because the pictures are not yet as good as they will be. I said as they will be because with the new systems of imaging sonar echo, it's likely that we will have, in the next two years, pictures which will be of a high standard of quality, but just this one was the first demonstration that a dancing baby is really dancing.

Dr. Shumiatcher: My Lord, with regard to the affidavit, the affidavit refers to another film, not this particular film, of Dr. Donald; so I don't have an affidavit for that, but – well, I think I have it straight now. This affidavit is for this film. It's not a cassette; it's a film. And I'd just like to read – it's a very brief affidavit: "I, Ian Donald CBE, MD, FRCS, (Glasg) FRCOG. Of Cobblers Row Waterside Road Paglesham near Rochford Essex U.K. make oath and say as follows: 'I have held the Regius chair in midwifery at the University of Glasgow from 1954 until 1976. Thereafter, I became honorary obstetrician to the Western General Hospital, Edinburgh, where I undertook the making of ultrasonic films. During the summer of 1979 or 1980, I took a video tape, the film of which was subsequently entitled "Human Development Before Birth" at the ante-natal clinic at the said Western General Hospital. The pictures shown in the said video tape were obtained by means of an ultrasonic scanning machine applied to the mother's abdomen. The tape depicts 4 unborn children seen at ages ranging from 14 weeks menstrual age (12 weeks from

conception) to 10 weeks menstrual age (8 weeks from conception), the ages being determined by measurements from the crown to rump. The unborn child and placenta appear white in the tape. The said video tape was subsequently directly converted into a 16mm cine film (under the title to which I have referred) by Spectrum Productions of 14 Charlotte Mews, London W1. I have myself demonstrated this film to audiences on a number of occasions and confirm that the events shown in the film are truly and accurately depicted without misrepresentation. I further confirm that the voice on the soundtrack of the said film is my own, and that the statements made by me in the soundtrack are accurate. "

And it is sworn before a solicitor, Chetland, I think, in Rochford in the County of Essex. I tender that, My Lord, as Exhibit P 57.

Exhibit P 57: Affidavit of Dr. Ian Donald

Dr. Shumiatcher: Can we have a ruler that possibly the Doctor can point – can use as a pointer, Mr. Brewin.

Q. Would you like this for pointing? A. May I move?

Q. Yes, of course. I'm sure His Lordship won't –

Dr. Shumiatcher: I should point out, My Lord, that the quality of this film is not particularly good.

(Film played entitled "Human Development Before Birth")

Q. Now, some of your comments, Dr. Lejeune, of course I don't think would have been picked up on or it might have been difficult to pick them up. Are there any comments that you wish to make now concerning the film we just saw produced by Dr. Donald? A. Well, I'm afraid it's not the one I have seen and the one I have seen was a lot better than that. At least, it was not the same picture. To understand the picture, you have to recognize that the frame is conical because it's the radar system coming which left the image in passing and that is the reason why it is difficult to visualize.

This one was on a baby – one of them was on a baby of eight weeks. That is just smaller than two months of age. And that is a remarkable achievement to be able to visualize, with echo system, such a young baby because remember he is that size. Now, the one I had I talked about was the one taken at eleven and a half weeks in which the baby was really dancing and that we not shown on the film. And this dance was really what I described as very slow and not this rapid quickening that we have seen, but something much

more elaborate and that was not presented in –

Dr. Shumiatcher: Now, the other film we have is a cassette, it's an audio-visual cassette, and we're going to show it here. The quality of the film is not very good, but it does show – I think it's the one that you have in mind, Dr. Lejeune. May we show this one next, My Lord.

(Audio-Visual cassette played entitled "Jumping For Joy.")

Q. Dr. Lejeune, is that the film you originally had in mind? A.

No,

sir. The one I saw was not made for the television. It was a direct output of the machine and, in fact, the picture was much better.

And myself, I could see the baby jumping, but I could not recognize where was precisely the head, the foot. And in the one I saw first, which was not broadcasted, but which was not mounted as a film – just little flashes – was much clearer than that.

Anyway, the demonstration is extraordinary that we can see the baby jumping at two months of age and that is beyond any possible discussion. And that was not known before Ian Donald demonstrated it. It was supposed to be, but it was not demonstrated.

Dr. Shumiatcher: My Lord, I'd like to tender Exhibit P 58, the film,

and as P 59, the audio-visual cassette, "Jumping For Joy". Now P 58 will be – is the film, "Human Development Before Birth." And I would like to advise you as well that the P 59, the last film, was produced about two years ago.

Exhibit P 58: Film entitled "Human Development Before Birth"

Exhibit P 59: Audio-visual cassette entitled "Jumping For Joy."

Q. Dr. Lejeune, we have been hearing and reading in the past year or so about a special kind of baby called a test-tube baby. What can you tell us about that? A. Test-tube babies are babies who owe their existence to a fecundation outside the mother's body.

They are not really living in a test-tube for very long, but for a moment the beginning of their life happens outside the body of the mother. The reason this was started was that some women have the fallopian tubes blocked. The fallopian tube is a kind of tube which goes from the ovary to the inside of the uterus. And

normally when the egg of the ovary begins to ripen, it increases in size and suddenly the follicle in which it's progressing ruptures and the egg gets free. Normally, the end of the fallopian tubes, which looks a little like a hand, goes around the ovary so that it can take the ovum and then the ovum goes inside the tube because the tube has some special fluid in it and if the mother has gotten in sexual intercourse previously or if she has had sexual intercourse at that moment, then spermatozoa can navigate from the vagina to the uterus through the fallopian tube and then one of them can go inside the ovum and fertilize it. That's the reason why test-tube babies are possible. It's because in the normal condition of nature, the egg is no longer part of the tissue of the mother, but it's a free cell floating freely inside the fluid of the fallopian tube. It's not any longer inserted in a tissue of the mother. Topologically speaking, the egg is outside the mother body naturally because the vagina is open to the open air so the penis can penetrate. Now, the uterus is open in the vagina, and the fallopian tube is open inside the cavity of the uterus. So that on pure topology, it's exactly like some invagination of the mother, but those cavities are related to the open air, so to speak, so that, inside the fallopian tube, the egg which has been laid by the ovary is no longer a part of the tissue of the mother, but is topologically outside the mother; but because the tube is coiled inside, it looks as inside the mother. That is not a purely anatomical phenomenon. It's very important because it allows the fact that instead of having fecundation inside the fallopian tube, we can just have it in any tube if this tube contain the appropriate liquid in which the egg can be floating and the sperms can be swimming. If fecundation was occurring inside the tissue, no fecundation in vitro could be possible. But because it's arising in a tube that it doesn't matter whether the membrane of the tube is a living tissue or if it is a glassware, the only thing that matters is that the fluid inside is correct for both the ovum and the swimming sperms. So that when a woman has the fallopian tubes blocked, very often as is sequely (ph) of venereal disease, of a sexual-transmitted disease, which has given inflammation and then the tubes are coalescent and there is no lumen on the tube so that the ova cannot go down and the

spermatozoa cannot swim up. In that case, a possibility is by laparoscopy – that is, opening the wall of the abdomen – to look at the ovary to see if the ovum is ripe and, if it is ripe, to take it very carefully with small plastic tubes and a tiny syringe and remove it gently from the body of the mother, put it in Petri dishes containing the appropriate medium and the appropriate temperature and then putting sperms so that the sperms will float, swim, and one of them will fecundate the egg. Secondly, just after fecundation has taken place – that is, the penetration of the sperm – the membrane of the egg, by a very curious chemical phenomenon which we can see under electron microscope but which we do not understand of the very details, becomes suddenly absolutely –

Court Reporter: I'm sorry, becomes what?

A – impermeable to the sperms. That is, once one has got in, the membrane changes entirely and locks the thing and hundreds or thousands of sperms float around, but they can't go in, so that the first union of the sperm and of the egg stops the whole possibility of changing that individual. It begins right here and no other sperms can go in on normal situation. Now, immediately after the cell begins, the chromosomes of the sperm and the chromosomes of the pronucleus of the egg begin to be easy to see and then they duplicate themselves and the first cell divides into two cells. Secondly, one of the two cells divides and there is a moment in which inside the zona pellucida – which is a plastic bag which preserves our early privacy – there are three cells at the very beginning and this odd number was a surprise because it was supposed that they would divide in two, then all the two cells would divide and make four and then eight and so on as a power of two. And curiously, nature does not do it that way. It first cleaves in two, then one of the two cells divides and there is a moment in which there are three cells. That was written in every textbook since around a hundred years and nobody knew what was the meaning of this stage of three cells. And then again, the cell which has not divided divides and we have four cells and then it goes on dividing, dividing. And very rapidly it forms a little berry always inside the zona pellucida and when it has formed enough, it

hatches like a chicken hatches from the egg, and at that moment, it can implant itself on the uterine mucosa. Long before the tiny human being is hatching from his egg shell – zona pellucida, plastic bag – it's possible to remove him from the artificial vessel in which it was and to put it again in a plastic tube, a very tiny nylon tube, and with a syringe you aspirate him with some fluid and you introduce very delicately this tiny nylon tube inside the cervix of the uterus. And so that you press a little and the tiny baby is just inside the uterus again, so that he has made a long journey around outside the body of the mother; he has begun his life in the laboratory in a Petri dish and now you transfer him back to his, I would say, legitimate place of residency, which is the womb of his mother. And after that, he has exactly the same destiny that any other tiny human being inside the womb. He would develop himself; he would anchor his placenta in the mucosa; and nine months later it would come out in the open air. Now, the first evidence is that test-tube babies are babies. That is, they have got the beginning of their life in a test tube, in a glass tube, instead of a flesh tube; but they have got exactly the same surrounding that any natural babies have. That is, the fluid was the same and the cells were freely floating in the beginning as in normal tubes. It was just to bypass the blocking of the fallopian tube that the whole process has been made. This has taught us very great number of facts which are just confirmation of the fundamentals of genetics, of the fundamentals of life, I was speaking about previously. That is, we know, and I would say Mr. Edwards and Mr. Steptoe, who were the first to do that, knew with certainty that the tiny human being they were transferring back inside the womb of the Mrs. Brown was not a tumor, was not an ordinary tissue, was not an animal, because if they had supposed it could be, they would never have taken the risk of implanting him back inside the womb of Mrs. Brown. But because of all the fundamental of life, all what we know about genetics, they were sure it was a marvelously young, I would say incredibly young, tiny human being they were implanting back in his right surroundings. And nine months later, it was the very same little Louise Brown which came to the light because they had seen her

when she was the smallest, tiny being any human can be that is inside the zona pellucida, the plastic bag at the beginning, and they were seeing her later in the open light. I would say that the in vitro fertilization has been the experimental demonstration that the life of tiny Louise Brown had begun at fecundation. And it is beyond any mystical, any metaphysical, any philosophical, contention – that is, we have here the experimental demonstration in our species that human life and this very particular Louise life had begun at fecundation.

Q. Had there been any further experiments of that sort carried out since Mrs. Brown's case? A. Yes, to my knowledge – I cannot give you an accurate statistic because I got a statistic ten week ago, six

weeks ago, and the thing is running – there are more than a hundred twenty babies born from in vitro fertilization. And one has been malformed, a few have been having some difficulty. One has been in cardiac congenital disease. But as far as we can tell for the moment, the frequency of accident does not seem to be greater than in so-called natural fecundation. So that it seems that really we're reproducing with that technique part of the normal scenario of the beginning of life and it's the reason why it does work. I would say – no, I won't go that far. But I would stress one point which is different from the question, My Lord, if I'm allowed.

That this technique has demonstrated the very incredible and stupendous tenacity of the early human being to live because you have to remember that this berry enclosed in this plastic bag – that zona pellucida – is one millimeter and a half of a diameter, and it can withstand a very enormous amount of mistreatment and still be alive and still continue its own destiny. You can, for example, freeze it and it was not for long that if you refrigerate a normal cell of our body, for example, and refrigerate it very carefully, slowing down the temperature so that you do it so carefully that no ice crystals are made, but the whole thing is taken as a jelly in a kind of glass. After the temperature is low enough, you can go very deep on the freeze and we use very generally liquid nitrogen a hundred and ninety-six degrees below zero. You can also do it in liquid helium which is at three degrees of the absolute zero and it

works just as well. In biology, we use liquid nitrogen because it's much cheaper. If we were physicists with enormous amounts of money, we would use helium. And at the moment that you have refrigerated the living system, you have not stopped life, so to speak, because if you thaw them carefully they will begin to vegetate and to proliferate again. What you have done is to put the time at a standstill; that is, by lowering the temperature, you reduce the vibration of the molecules and the speed of the reaction, and when the speed is very, very reduce, then it's like if time were interrupted, suspended, so to speak, and that is known in the language of every day. We use the same root, the same concept, for temperature, which is the amount of calorific energy and for the temp switches elapsing. We speak about the tempo of something, which means the running time. And it's the same with this temperature because what makes time running is that molecules are vibrating; and coming to the zero, the absolute zero. Everything would be at a standstill and the time itself would be at a standstill. That's the reason why using those frozen temperatures we can keep any cell or any tiny embryo at a standstill, we can stop the time forever. But if we resume a normal temperature, then the molecules would vibrate again, and because his genetic makeup has not been destroyed, because this very fine machinery which makes the information of life possible has not been disturbed, he will start again to develop himself. In fact, it's a kind of forefront general anesthesia, but much deeper than general anesthesia because everything is, so to speak, anesthetized because time is at a standstill. Now, this again demonstrates that the early human being is living by himself because you can even stop the time and you could keep him maybe for years. We have no experiments for more than a few months actually, but as far as we can forecast on helium liquid, an embryo could be kept for ten years, hundred years, maybe thousand years, if the vessel containing it is perfectly protected, and then thaw it again and resume his own development. And that demonstrates beyond any possible discussion that the entire development of this human being is due to his genetic endowment and to his own personal machinery, and only what he

needs is correct surroundings – that is, temperature around thirty-seven degrees normally – and some fluid or getting food from it.

Court Reporter: Excuse me.

(Court Reporter Changing paper)

Q. I think you were going to say something further, Doctor? A. Yes, I wanted to stress, My Lord, that at the beginning, it was only intended to re-implant a test-tube baby inside the womb of the mother from which the egg was taken by laparotomy. But I do not agree entirely with those manipulations myself, but I'm talking about them for the scientific evidence we get from them. It has been recently made and it has been published, if I remember, two weeks ago in the British journal, Lancet, that fecundation in that case was not made in vitro, but was made naturally. That a woman had an intercourse, fecundation took place inside the fallopian tube, and when, two days later, they did laparoscopy and they aspirated what was inside the fallopian tube – that is, the tiny baby – and this baby was implanted in the womb of another woman – that is, a woman who had not given the egg – so that this baby was entirely different genetically from the recipient woman – exactly the same experiment I was talking with Mrs. Charolais giving a little cow to Mrs. Holstein in this country – and this baby is developing perfectly well in the womb. That again is a definite demonstration that mother is supplying shelter, food, protection, but no genetic information, no basic human information, after she has given all the genetic information through the egg and father has given it through the sperm. Those things are just confirmation of the basic law we knew, but those confirmations are now available in our own species.

Dr. Shumiatcher: My Lord, this would be a convenient time to adjourn if it suits your Lordship.

The Court: Fine. Until what time?

Dr. Shumiatcher: I'm just not quite sure how long this will take. Three-thirty would certainly be safe.

The Court: All right.

Court adjourned at 1 pm, May 12, 1983

Court reconvened at 3:30 pm, May 12, 1983.

Q. Dr. Lejeune, we are fast approaching 1984 and the wonderful world of George Orwell and Aldous Huxley in his Brave New World. What is there in store for us or what can we learn from Huxley's imaginary world of tomorrow that would be relevant to the subject we've been discussing today? A. My Lord, I have to confess something, that very generally poets, literature writers, see better science than we do ourself scientists because they see it from outside and so they see it coming, if I could say so. Ourself, we have the nose on our walk and we do not see the walk which is coming on the foreground – on the background. And I would say that reading especially the Brave New World, I was struck by something which was a very deep understanding of the human nature. You remember probably that in this Brave New World, there is no longer a pregnancy. Every baby is made in a test tube and there is a big factory in which test tubes are handled so that at the end of the process, there is no child bearing, so to speak, but breaking the glass to have the young baby put in the nursery. By the way, that's interesting because even in the Brave New World, nobody believed that the baby belonged to the bottle. They believed that the baby belongs to himself; therefore the bottle has no right to the baby because the baby was growing inside the bottle.

But the most important thing was said by Aldous Huxley. Because in his Brave New World there was no taboo, sex was only for playing with. It was not any longer for reproduction because reproduction was made in the factory. So that sex and every, what we could call nowadays still, dirty words or dirty behavior were common place and common language. Nevertheless, they were obliged – and Aldous Huxley has a full chapter on that – they were obliged to reprint all the literature in order to expurge it from a dirty word, a word which was so repugnant, so kind of obscenity, of incongruity, that even it should not be found in all texts like Shakespeare or any other of them. And they rewrote the whole thing and this word was replaced by three points. You remember probably what this word was, My Lord. It was the word 'mother'. And that is a fantastic kind of deep insight that in this world, this world in which everything was permitted, only one thing was considered shocking: the fact that the human being developed

himself inside the body of his mother. And that means a terrible invasion of the values because mother is the refuge, the person in which you can trust, you can believe; and even the young soldiers, when they are dying at twenty years of age in the battle, they are crying for mother. If this link between one generation and the next is broken, then you are breaking really one of the fundamentals, not only of the society, but of the human feeling by itself. And that is, to my own reading of Aldous Huxley, the most profound lesson he has given to us that if we lose this link between generations, then we will lose our framework of values, we will invert the moral values, and that's the real danger. Now, if I can say a word about literature. I'm sorry to speak about literature, I'm a geneticist. But there is another man, maybe greater than Aldous Huxley, which was even much more profound, a hundred and fifty years ago. He was Wolfgang von Goethe. When he wrote the first Faust, the damnation of Dr. Faust, it was in fact the story of the beloved,

seduce, pregnant, and – Court Reporter: Pregnant and what?

A -And abandoned. But then the second Faust, he showed us much more even than Aldous Huxley because Faust, with the help of Mephisto, built a kind of technological empire. And one day, Mephisto, with his diabolic – devilish- companion, came back to his old home and he saw in his own room his own pupil, who is now a professor, who was preparing a homunculus in a bottle, a test-tube baby. And suddenly the bottle makes a noise and this dream baby is going out of the bottle and even Mephistopheles says, "It is devilishly dangerous." And after that, Faust became entirely out of his mind, he burned his technological empire. And at the very end, he told Mephisto, "You have to stop this little bell which is still ringing in my empire, there is still one ringing, and you have to remove this little cabin in which Philemon and Baucis, the paragon of human love, are still living." And at the end when Mephisto came back, the church bell has been put to silence; he had burned Philemon and Baucis in the little cabin; and at that moment, sorrow invaded the heart of the Doctor and then he died.

I do believe I think the poet is telling us much more than science can describe. That is, if we destroy this respect for the small one,

this respect for our own progeny, we will destroy also what is the most precious part of our life, which is simply love.

Q. While you're on those profound subjects, there are some problems that have been raised that I suppose would defy the judgment of King Solomon. Is there something in the wisdom of Solomon that bears upon this subject as well?

Mr. Sojonky: My Lord, I find this a fascinating expert witness, but I

think we'd agree, and as the witness-

The Court: He's qualified as a geneticist, Dr. Shumiatcher.

Mr. Sojonky: Exactly, as the witness himself has admitted. The evidence he's given so far this afternoon has nothing to do with his own field of expertise. Enough said.

Dr. Shumiatcher: Well, I'm in Your Lordship's hands.

Mr. Sojonky: It's interesting that my learned friend now appears to be indicating through the expert witness that the problem, the issue before the Court, is one not only of science, but of philosophy and poetry and so on.

Dr. Shumiatcher: I think they're all inseparable and if we lose our poetry and if we lose our sensitivity and our philosophy, we're really

losing the whole basis of law –

Mr. Sojonky: And I would agree with my learned friend.

The Court: Is that not a subject for argument rather than of testimony?

Mr. Sojonky: Exactly, My Lord.

Dr. Shumiatcher: Well, we're so fortunate, it seems to me, to have a man of Dr. Lejeune's wide knowledge; however, we'll leave that out.

Q. Let's talk about your own discipline. Dr. Lejeune, is it possible for a pregnancy, once commenced, to be continued or carried out outside the human genitalia entirely? A. It is possible, it does happen, and we call it abdominal pregnancy. And sometimes it happens, especially when there is difficulty in the fallopian tube, that the egg is released at the opening of the fallopian tube, it is fecundated by the sperm which has been carried there by normal intercourse; and that instead of running inside the fallopian tube,

the egg goes wandering, falling in the abdominal cavity and, more specially, on the mesenteric parts which give the blood to the bowel. And there are many cases recorded in literature in which the child could make the whole development up to nine months inside the abdominal cavity entirely outside of the womb and, indeed, the delivery has to be made by laparotomy. You have to cut and to open so that the child can be delivered. And some of those children are entirely normal. That is an extremely rare phenomenon in our species, but it does exist spontaneously. And it has a great interest in that it shows us the extraordinary tenacious process of living of the tiny being at the very beginning because even he can live if he's not inside the womb. By the way, that gives us the impression – but for the moment it's only an impression – that we could eventually be able to build some day a kind of fluid supplier which could replace the womb so that the placenta could anchor itself on it and the baby could grow entirely outside the female body. For example, it could even be possible – I would not recommend it at all and I would consider that it would be a game that we should not play in human beings – but it could be possible – at least it's conceivable, so to speak – that an early embryo, if he was injected inside the abdominal cavity of the father and put on the mesenteric place, would probably develop and have the whole pregnancy developing inside the abdominal cavity of a male. I'm not proposing that we play that trick, but it is very interesting to understand that it is an extraordinary demonstration of the autonomy of the young being if he's just accepted in a shelter and provided with enough nutrient. He even does not need probably the hormonal specificity of the female body. I would suggest myself that the old manners are the good ones; but nevertheless, nature sometimes does it that way. And there is at least one species of fish, which is Hippocampus, in which the fecundation occurs in the female; but then the early embryos are put back by the female inside a kind of pouch that the male has provided by nature. And at the end, the tiny Hippocampus are expelled by contraction of childbirth by the males and become to swim, begin to swim; which is an example that pregnancy, by itself, is not entirely linked to one sex by nature itself, but is linked to a shelter

and to providing vital fluids.

Q. Thank you very much. Now, you say that this is not a procedure that you would advocate. It might be a trick of nature, of course. And is that related then to the inherent role that a mother does play in a pregnancy? A. Well, may I be allowed, My Lord, to answer something which is beyond the field of genetics? Motherhood is an extraordinary phenomenon, especially in our species, for two reasons. The first is that it is by far the safest system that we can think about to build new generations, and we are not of the Brave New World technology building the babies, fabricating the babies, in a factory. But the second is that during pregnancy, a very complex transformation of the woman does occur by the interplay between the hormones of the baby and the hormonal stage of the mother. We have to remember that at one week after fecundation, it is the baby which produces a special hormone, a kind of signal, that goes inside the blood of the mother and which stops the evolution of the ovary so that a corpus luteus will develop and prevent the next menses. But it is the baby which prevents mother of having menses because if she had menses, the baby would be flushed away. And in fact, he takes over his own destiny at around one week of age. He does of his mother what he wishes, and he will do it the next month and the next years of his life, as everybody knows. Now, during that time, this signal changes the inner equilibrium of hormones of the mother; and probably during the first two months of pregnancy, the baby is pumping out of the blood of the mother very peculiar substances which are necessary for building himself and deprive a little his mother. And the reason is psychologically, extraordinarily interesting to observe that very often during the first two months of the pregnancy, the woman – I should say the mother because she is already a mother – has a curious feeling even if she is very happy of having a baby; she feels something, she has vomiting, she has small discomfort, and very often they're unhappy of being pregnant during the first two months. We do not know exactly the basis for that, but it's probably related to a depletion of the mother organism of some food which is very important for building the child himself. But after three months or four months, the equilibrium is re established again, and at the end

of the pregnancy the mother becomes more exhilarated, they're very happy about the pregnancy itself even at the end of the pregnancy if the baby was not desired at the beginning. And that is probably the experience which a man cannot understand. We can rationalize about it, but this deep feeling is probably an extraordinary preparation of the woman to really act as a mother – she is already because she is pregnant – but she has not realized because she has not yet the baby on her arms. And this probably gives the possibility of an extraordinary bond between mother and child which would develop with breast feeding and which will allow the mother to have a patience to suffer disturbances about this baby because the baby is a burden in a way; but she has learned so much during those nine months of pregnancy from, I would say, her own conscious, consciousness of physiology, that she is ready to be the mother that every child needs. And it's that physiological reason that I do believe that even if we were able to make the whole pregnancy in the test tube very comfortable for the baby, parents would not be that well prepared to take care of the baby after birth if this long process of their life together during nine months had not been entirely felt by the mother. I don't think that we are like flies, we're not built like mosquitoes, we're not laying eggs and getting an adult from it. We are, in fact, a chain of living individuals and the memory of our obscure life I spoke about in the music; but in the reverse, the memory of the pregnant life probably allows the mother to be better mother than she would if she had not had this physiological experiment of nine months. Now, you have asked me a question about Solomon, and I must say that the wisdom of Solomon is physiological, if you'll allow me; because when he wanted to know who was a woman in which motherhood was really developed, he asked it, "Cut the baby in two pieces and give half of the baby to each of the two women" and the one who had really matured motherhood said, "I prefer the baby is living and given to the other one." And that is an extraordinary maturation. The wisdom of the judgment of Solomon is what we are discovering every day and the

structure of the human nature.

Dr. Shumiatcher: Thank you, Dr. Lejeune. My learned friend may have some questions to ask you. Oh, pardon me, I just wanted to put in an article of the Doctor, I'm sorry.

Q. Dr. Lejeune, I just wanted to show you an article – it may be of assistance to Your Lordship – that you wrote and I'd like to put in this. This is an article, "In Re New Humans" which appeared in the

Human Life Review, Volume VII, Number 3. Is this a true copy of your article? A. Yes.

Dr. Shumiatcher: If I may tender that as Exhibit P 59?

Clerk of the Court: Sixty.

Dr. Shumiatcher: Sixty, thank you. Exhibit P 60: Five-page article

by Dr. Lejeune entitled, "In Re New Humans"

Q. And I'm showing you now what is marked Exhibit – Appendix 'C'- which was originally annexed – I'll put in the original – to a case in the Supreme Court in the United States for the October, 1982 term on a Petition for Writ of Certiorari, and it's an article which I

understand you wrote for an English journal not yet published? A. It's waiting for the British Commission on In Vitro Fertilization in which the test has been submitted, and it's not yet printed. And secondarily, it's because it wasn't the same subject, I was requested if I agreed that be presented also tot eh Supreme Court of United States; and I agreed openly. So that this text you have is, so to speak a preprint, but it's entirely my text. I recognize it entirely, I mean.

Dr. Shumiatcher: Well, then I'll put in as P 61 the Supreme Court of the United States Petition, and this appears on Pages A17 and following, My Lord. They're both rather brief monographs.

Exhibit P 61: Article by Dr. Lejeune on Page A17 and following of "Petition for Writ of Certiorari"

Dr. Shumiatcher: Yes, the Human Rights Review – P 60 is published in the Human Reights Review, Volume VII, Number 3, Page 60, summer of 1981.

Witness: This one is a reprint of what – of a disseminer I gave to

the U.S. Senate. It's the same text.

Q. And you gave that testimony to the Sub-committee on Separation of Powers on April the 23rd, 1981. A. Exactly.

Dr. Shumiatcher: Thank you, Doctor.

Mr. Sojonky Cross-Examining:

Q. Dr. Lejeune, what is your religion?

Witness: Is that question relevant, My Lord?

The Court: It was asked of a previous expert witness. A. Very well, I'm Roman Catholic.

Q. Thank you. And am I correct in saying that you are personally opposed to doctors performing abortions? A. I am opposed to any abortion, not about only doctors.

Q. I see. And I take it then that you would be opposed to any abortion notwithstanding that the mother's life might be in danger?

A. My Lord, I would suppose that the life of the baby has to be preserved by all the means that we have because he is a member of our species. Now, if the life of the mother is endangered, our duty, as doctor, is to try to save both lives; and that is the general philosophy that everybody has in a case of emergency. And it's not

only in medicine because when a ship is sinking, there is a very great emergency and in order they've given is woman and children first. It's not children first; it's not women first; it's women and children first. And it's what medicine is doing now. And I would say that in our lifeboat of medicine in most of the cases – and I would say bluntly, in every foreseeable case – we have a lifeboat with two places: one for the mother and one for the child.

Q. Now, I'm going to repeat the question because I don't think I got an answer. Now, assuming that the mother's or the woman's life is in danger, would you – personally, would you feel that an abortion would be appropriate? A. I would, my Lord, fight the danger. I would not fight against the baby. And as I say, we have means to save the life of both mother and child.

Q. And if the mother's life could not be saved? A. I don't see any actual case in which we could say that actually, sir.

Q. There would be no cases in this world – A. I'm not an

obstetrician. I am a geneticist.

A. That's fine, then. A. I would just say from quotes from one of my good friends, who is Dr. Jaman (ph) in Paris – he was the head of the biggest delivery hospital of Paris and he presided over more than fifty thousand childbirths – in no case was he forced to make an abortion in order to save the life of the mother; that is his own testimony.

Q. If the health of the woman who is pregnant, if her health – let's assume her health is in danger and let's assume it's her mental or psychiatric health. Is it your personal belief that notwithstanding that her mental or psychiatric health was in danger, that still would not justify an abortion? I'm asking for your personal belief now, Dr. Lejeune. A. My Lord, I'm not speaking about my personal belief. I'm speaking about facts.

Q. But I'm asking for your personal belief, Doctor. A. But it's not a matter of belief. It's a matter of behaving, as a doctor, in front of facts. Now, I don't know of psychiatric states in which, because of the pregnancy, the state of the mother is worsening. Those states do exist, but I don't know of one in which abortion would do better than continuing the pregnancy and there are numerous statistics about that. In some cases of, let's say, schizophrenia, severe depression – which are dangerous syndromes of the mental health of the mother – in which, in some cases, pregnancy was coming to term, was left to come to term; in other cases in which it was interrupted by artificial abortion; and if you look at the statistics on the health of the mother a year later, there is no proof whatsoever that abortion prevented the worsening of that pregnancy, continued up to term, was really damaging more than the interruption of the pregnancy. Then we have to judge about the facts, and the facts are those I've just reported to you, My Lord.

Q. But I take it from what you say, your personal belief – assuming that a woman's health might be endangered – your personal view, given what you've said, abortion should not be performed? A. My personal view is very simple. During pregnancy, there are two living human beings – mother and child – and as a doctor, my duty is to help both and not to make a choice: "I will discard one in the interests of the other."

Q. Dr. Lejeune, abortion is permitted in France, I understand? A. The law actually, yes.

Q. And is it similar to the laws in other countries? For instance, beyond perhaps twenty weeks or so, one must go to a committee or is it similar to that situation? A. It is, in a sense, similar to what you

said: that in France, if a child is less – if I remember well – it's twenty weeks – one doctor is sufficient to kill the baby. Later, you need two doctors. That's the only difference. I don't see the reason why two doctors are allowed to kill later than one, but it's –

A. And you say "kill the baby" because you believe abortion is murder; is that right? A. I would not say that, My Lord. I would say that a child in utero is a human being to the best of the scientific

knowledge we have, that its genetic endowment is human. He is living by himself, then he is a being; and being a human is a human being. Now, I would say if you suppress this human being, I don't know if you are committing a murder. That is a question of the law. It's not a question of biology. I would say you are doing a homicide; a homicide, that you are killing similar one – the one which is similar to you. You're killing a member of your own species – that is, 'homo/homoioid', which means similar; and 'cide', which means kill. And I would affirm definitely that deliberate, artificial abortion is an homicide. Whether it will be called a murder, that's the opinion of the Court. It's not any longer the opinion of the biologist.

Q. Beyond the twenty weeks, Dr. Lejeune, am I correct in saying that if the mother's health or life is endangered, an abortion is legally permissible in France; is that a correct statement? A. Bigger means after.

Q. Well, after twenty weeks, an abortion is permissible legally if the mother's health is in danger or if her life is in danger? A. Unfortunately, that's the actual stage of the French rule.

Q. Thank you. Now, is it your view, Dr. Lejeune, that scientific evidence or facts are of assistance in determining ethical and philosophical and theological issues? A. Not in the general sense.

Q. Thank you. A. But – I've not finished my answer, sir – but

you have to know what you are talking about. Now, if you talk about a member of our species, a human being, and that you do not find in ethics, in morals, or in religion, a definition of what is a human being, then you have to rely upon science to know what you are talking about. And in that part of the discourse, surely any law, any religion, any moral, has to know what are the basic facts of the reality, and it's what science is about.

Q. So you are saying, then I take it, that theology and philosophy and ethics do have a role to play in determining the meaning of life and the beginning of life? A. I'm sorry, My Lord, I was not clear because I said exactly the contrary. That is, biology has to play a big role to give the evidence to the moralists, to theologians and to lawyers, what the facts are, so that they can evolve their moral and ethical rules on reality.

Q. Now, you indicated this morning that you couldn't understand the dispute and the problems concerning when life begins. Now, so you do admit that there is a dispute here? There are divergent views, are there not? Am I correct? A. No.

Q. There are no differences of opinion? A. Not among scientists about what makes the definition of a new individual; have never read any textbooks in genetics for which the beginning of each individual is not starting at fecundation. That does not exist; I never read that.

Q. And just on that point when you've made reference to fecundation, I presume you mean – the terms are interchangeable: fecundation and conception?

A. They're interchangeable; that is, they occur at the same time. They have not entirely the same meaning scientifically. I can clear that for you.

Q. Yes, I'm not so sure it's important for our purposes – A. No, I don't think, but I can clear it for you –

Q. – but we can use the terms interchangeably because we have heard numerous references to life beginning at conception in the past few days? A. Yes, and conception means that the thing has been entirely spelled out because you cannot conceive what a law means if the words of the law have not been spelled out. To have a

conception of the law, you have to have it all spelled out. It's exactly the same thing with life. To have a conception of a new human being, the words of the life must have been entirely spelled out, and they are spelled out at the moment of fecundation because part of the spelling is coming from the sperm, part of the egg. So that explains why we can use, more or less to describe the same thing, conception or fecundation although it's not exactly the same concept.

Q. Now, are all the geneticists or do they agree with you that life begins at conception or do some of them disagree? A. I have to be very clear, My Lord. Everybody agrees that the life of a new being begins at fecundation; but life is a general process, so if the individual which begins at the right point, but life is running on the earth's science for billions of years, then you cannot say when life begins because if you ask that question, the answer is for billions of

years. But you can ask when this living system has begun and the answer is at the fecundation if it is a superior animal. If it was, for example, a bacteria, the answer would be impossible.

Q. Now, I don't – I think you would agree with me that your colleagues in the genetic field believe that there is a living cell at conception certainly. We'll take one step at a time. There is a living cell or something alive. I think it's fair to say that some of them might then go on to say that that living cell or organism- and it's not for the moment important what we call it – is not a human being, and in that respect they would then disagree with you; is that

not a fair statement, Dr. Lejeune? A. I don't think, My Lord, it's entirely fair because if we define a being as something subsisting by

its own individual, and the quality of human by the genetic endowment typical of our species, I know no scientist who will disagree with me that after fecundation there is a human being. They would not use the word exactly of the way common language would use it, I agree with that. They would not extend its signification to cover everything that human – our general language would do, but they would accept the same thing.

Q. And they would not use the word 'person' would they? A. Probably they would not and I think that I would not myself use it very often for a newborn. I would use the word 'person' for, let's say, after ten years of age, of the age of reason, around seven years, I would commonly of the common language use the term of 'person' much later in life.

Q. Now, you indicated that the mother knew when she was carrying a human? A. Yes.

Q. When she's pregnant? A. Yes.

Q. Would she think she's carrying anything but an unborn child or a fetus? She wouldn't think she was carrying something else, would she? A. I'm not a woman. I'm a father. We have got five children, and I know what my wife talks about the time she was pregnant and she was always feeling that she was carrying a child even if the child was very tiny. And I think she was not exceptional in that particular

respect and all the women of the world believe that when they're pregnant, the thing they're carrying is their child.

Q. That's true. Now you gave some evidence with regard to functioning outside the womb. Now, I take it that today a fetus – and I think it's fair to speak of a fetus at about eight weeks; am I correct? A. Yes.

Q. A fetus could not survive outside the womb as an independent unit at eight weeks; that a fair statement? A. Yes, yes outside the womb not.

Q. Thank you. A. But as I said, just as well as the astronaut on the moon would not survive outside the mother ship, just the same. It's not a matter of the ability. It's a matter of not too hostile surroundings.

Q. Now, you spoke of certain reactions, such as thumb sucking. These are reactions of the fetus or reflexes? A. M'hm.

Q. They are? These are reactions or reflexes; correct? A. They are reactions. It's more complex to see reflex like the knees jerk; it's much more complex. You need a rather complex nervous system to clench your fingers and things like that.

Q. Now, you mentioned a few moments ago that you gave testimony to the Subcommittee in the United States and, of course, then you know that they were considering what has been referred to as the Human Life Bill? A. M'hm

Q. And that was in 1981? A. Yes.

Q. And the statement that was introduced as an exhibit this afternoon is similar or I would say identical to the testimony you gave in Washington two years ago, right? A. Yes.

Q. And that included the story about Tom Thumb and so on; that's all in the same record in the United States? A. Yes.

Q. Now, Dr. Lejeune, do you recall some of the other testimony that was given in Washington that year by numerous individuals, numerous scientists, lay people, and philosophers and so on? A. I recall a few of them, but I do not repeat them.

Q. No. Now, do you recall or do you know of the testimony given by a Dr. Leon Rosenberg? A. I think I remember a little about it.

Q. Do you know a Dr. Leon Rosenberg? A. Not personally.

Q. I understand he's the Chairman of the Department of Human Genetics, Yale University Medical School; is that correct? Is that your understanding? A. It could very well be.

Q. I'm looking at the U.S. Subcommittee Hearing records. Now – and he testified, I think it's fair to say, shortly after you testified. And just for the record, the Legislature in the United States was determining whether a law should be passed that there was a significant likelihood that actual human life exists from conception and you can, I'm sure, well recall that question, and that's what all the experts were addressing themselves to. Now, and I just want to read certain statements and you can tell me whether you agree with them or whether you disagree with them. Now, in considering that question, whether human life exists from conception, Dr. Rosenberg said: "I must respectfully but firmly disagree with this statement for two reasons."

Dr. Shumiatcher: What page are you reading from?

Mr. Sojony: Forty-nine. "First, because I know of no scientific evidence which bears on the question of when actual human life exists; second, because I believe that the notion embodied in the phrase 'actual human life' is not a scientific one, but rather a

philosophic and religious one." Now I take it, Dr. Lejeune, that you would disagree with that statement; am I right? A. Well, I would like that you repeat it so that I am entirely sure what I say.

Q. Certainly. He says: "First, because I know of no scientific evidence which bears on the question of when actual human life exists;" - and we'll stop there. A. Well, let's stop an moment. It's for me a very bewildering statement that if a human geneticist cannot tell if human life does exist – he's speaking about the existence of human life – this is a bewildering statement because it meant he does not know what a human being is. He does not know that a species is existing, and I cannot agree with that statement. All human genetics is there to tell us what our species is and what the members of our species is, otherwise it would not make any difference between a chimpanzee and a man; and we do it and we are right doing so, then this statement is very bewildering and I would like you to remark that yourself.

Q. Certainly, you say it's bewildering and your words were you can't agree, fine. Now, let's go on to the second statement: "second, because I believe that the notion embodied in the phrase 'actual human life' is not a scientific one, but rather a philosophic and religious one." Now, I take it again, Dr. Lejeune, that you would disagree with that, given what you've said today? A. Exactly.

Q. Thank you. A. But I would make a remark, My Lord, that those two remarks have nothing to do with human genetics and they're philosophical themselves; they are not the entity because they are saying that science knows nothing, that science does not know that man exists. And so they are philosophy; they are not science whatsoever.

Q. Now, I'll go on and read you briefly some statements which – and these statements I think you will agree with – from the same Dr. Rosenberg on the same page. He says: "There is no reason to debate or to doubt the scientific evidence indicating that conception is a critical event in human reproduction." And I'll just go on because I think it's tied in: "When the egg is fertilized by the sperm, a new cell is formed that contains all of the genetic information needed to develop ultimately into a human being."

Now, I think, in certainly name, you would agree with that statement?

A. It's only one word which is not added; the word 'sufficient.'

Q. Where would you – A. That the information necessary and sufficient. Otherwise the statement is perfectly correct because Rosenberg is Professor of Genetics after all; he could not teach to his students something which is not true.

Q. Now, he goes on to talk of the cells diving and so on and, of course, there is no dispute in that regard. He says that: "The presence of these properties proves incontrovertibly that the fertilized human egg is a living cell..." – and I'll stop there. I don't think you disagree with that? A. Again, the statement is true,

but incomplete. It's a living human cell of a very peculiar kind because it's the only kind of cell which can build itself by division in a complete human body."

Q. And he goes – A. That thing is not possible for ordinary living human cells, the ones which make the rest of our body.

Q. He says, in speaking of these properties: "...the fertilized human egg is a living cell with the potential for human life."

And I take it, from your evidence, you would disagree with that statement, that portion of his statement? A. I would think that the word 'potential' is employed in a sense –

Q. I'm sorry? A. The word 'potential' is used in a sense that Aristotle would not have used; that is, already in 'potential' of. I mean, that it's not potential in the sense it could eventually. It is already doing, already happening.

Q. So you would not agree with his use of the word "potential of human life" when we're speaking of this cell? A. Taking the meaning of 'potential' in actual English, taking it in the purely Aristotelian sense, maybe I could agree on 'potential'; but it has a stronger meaning than potential actually, in the actual language. It's a matter of semantic s we're discussing.

Q. He goes on to indicate that he feels there is a difference between potential for human life and actual human life. Would you – you would disagree with that statement? A. I would think about it because when I give a complete anesthesia, the person

does not think, does not move. If I deep-freeze her, she would not feel anything. And I would say she is actually a human being which has not the potentiality of showing it to me, but she is actually a human being. And for the early fetus, I would just say the same thing. He is actually a human life, but he cannot express that. It has not the potential of expressing that enough to ordinary eyes to be sure that he is a human life. But because of the basic knowledge we have, it's clear to us it's an actual human life.

Q. So you would disagree with Dr. Rosenberg's statement; am I correct? A. I would say that I would not agree entirely with the quotation he makes with potential and actual; yes, I would disagree on that.

Q. Thank you. Now, he speaks of the –I'm just trying to save a little time – A. May I come back to that point, My Lord?

Q. Well, if I could just go on, Dr. Lejeune. A. Okay.

Q. Now, he speaks of the sequence of events in which you're certainly most familiar with, and he speaks of the genetic blueprint, and human development cannot be initiated without the genetic blueprint. Of course, you would agree with that. And he speaks of the protection and nutrition provided by the mother's tissue and, of course, you wouldn't disagree with that. And he says then on page 50: "This absolute dependence of fetus on mother lasts normally for nine months, after which the birth process abruptly separates mother from child." What – would you agree with that statement? A. It's all –

Dr. Shumiatcher: Excuse me, I think you ought to ask it in part. First of all, are you asking him about the absolute dependence, first of all, because the sentence deals with more than one point. A. Well, if you ask me about the length, I would say nine months is the agreed term of the pregnancy. Absolute dependence would not be right because, as I said, it could eventually be not of the mother herself. It is dependent of supplies, not dependent entirely of his own mother.

Q. I see. So you would disagree with the first portion of the statement that I read to you. And then I'll read the next portion: "...after which the birth process abruptly separates mother from

child." A. No, I don't disagree with that.

Q. You don't disagree with that? A. No.

Q. Fine. A. If you have kept the umbilical cord separated.

Q. Now, Dr. Rosenberg then goes on and he states "When does this potential for human life become actual?" And I take it, in your view, that that's not a question that you would ask of yourself because you believe that actual human life begins at conception, so – A. My Lord, I must confess that I have difficulty. We're not any longer discussing facts – we are discussing philosophy – because to tell when a potential thing becomes an actual thing is a philosophical theory which has nothing to do with genetics.

The Court: Well, he's merely asking you whether you would even ask yourself that type of question. A. No, I would use basic facts of genetics better than discussing about potential and actual life. I don't know what is a potential life; I don't know what it is.

Q. Would you ask yourself the question: "When does this potential for human life become actual?" Would you ask yourself that question as a geneticist? A. What potential are you talking about? Q. The potential that Dr. Rosenberg is referring to. A. But then I'm sorry, My Lord, but I would prefer to discuss the matter with Mr. Rosenberg himself because it's not clear to me what he means –

Q. Let me read you Dr. Rosenberg's statement in that regard then: "The presence of these properties proves incontrovertibly that the fertilized egg is a living cell with the potential for human life." Now, he then goes on very shortly thereafter to say: "When does this potential for human life become actual?" Now, I gather from your testimony today that you would not ask yourself that question; am I right? A. I'm afraid I'm not a metaphysician to ask me that –

A. Would the answer be yes or no? A. The answer would be that if it is living cell, a potential with potentiality, then it cannot become actual if he was not before. That is, if the cell is living, then there is a life in the cell; then the life cannot be potential; it's actually there. There is a contradiction of the two terms of a living

cell with a potential for life.

Q. I don't think that there is any dispute that it's a living cell.

Certainly, I wouldn't question that. A. Then it's actually living.

Q. That it's actually living. A. Good.

Q. And then that means there is life; right? There's life. A. Oh, no doubt, and this life is human. No doubt because we know the chromosomes and we know all that's there, otherwise we don't know what we're talking about.

Q. Of course. Then you go on to say, "This life is human" and Dr. – A. Actually human.

Q. And Dr. Rosenbergf says the living cell has the potential for human life. And all I'm saying is there is a disagreement, isn't there, Doctor? A. It's a philosophical opinion. It has nothing to do with actual facts.

Q. There is a disagreement then? You disagree with that statement, as you've already – A. With the philosophical statement about potentiality.

Q. Leaving that aside for a moment, you disagree with the statement? A. Of the potentiality statement.

Q. Yes, thank you. Now, I want to go on, Dr. Lejeune, and are you familiar with Dr. Joshua Lederberg, Nobel laureate in genetics? A. Yes, I am acquainted.

Q. I'm sure you are. Now, Dr. Rosenberg, in the middle of his testimony, in discussing when life begins – Dr. Shumiatcher: What page?

Mr. Sojonky: Page 50, I'm still on page 50. "Modern man knows too much to pretend that life is merely the beating of the heart or the tide of breathing. Nevertheless, he would like to ask biology to draw an absolute line that might relieve his confusion. The plea is in vain. There is no single, simple answer to "When does life begin?" ... In contemporary experience, life in fact never begins – it is a continuum from generation to generation." Now, what about that statement of Dr. Lederberg. A. Well, My Lord, one thing which has to be made clear, that Lederberg is a specialist of virus and of bacterias; and if I was speaking about the life of bacterias, I would have very great difficulty to say at what moment an individual bacteria came in actual bacterial existence – to use the

philosophical concept of Mr. Rosenberg. But when we're dealing with complex living systems like mammals, and we are mammals, we know perfectly well that there is a starting point before which a given individual was not existing whatsoever and after which this individual has been initiated as beginning his own personal career, and this point is fecundation.

Q. Well, so I take it then you would disagree with Dr. Lederberg's statement? A. No, not in the broad term. Life is transmitted from parents to children. And in that case, if you take life as a general word, you can say that it continues. But if you speak about personal individual life of an individual, then it has a very nice starting point.

Q. Well, I'll just read the first portion of his statement, the statement: "Modern man knows too much to pretend that life is merely the beating of the heart or the tide of breathing." A. I agree with that; it's more than that.

A. And he says that asking biology to draw a line to relieve this confusion would be in vain, would be a plea in vain. A. I've never thought, with due respect to Mr. Lederberg, that it's in vain that we question science. Science has the possibility of giving us questions, and, in that very case, has given it.

Q. Now, on the same page – I'm sorry, not the next page- and this is still Dr. Rosenberg's testimony, page 51 – he refers to a statement by another individual – whom I'm sure you know – Dr. Frederick Robbins, who is a pediatrician, virologist, and Nobel laureate in medicine. And Dr. Robbins says: "The question of when life begins is not, in essence, a scientific matter." Now, you would disagree with that statement? A. I would say that such a statement is not a scientific statement. It's a philosophical statement.

Q. Assuming for the moment I agree with you – and I'm not so sure I do – you disagree with that statement? A. Well, I would say that statement cannot be discussed on scientific grounds. If you say something is not scientific, you are not using a scientific statement because then you put it outside of science.

Q. Yes, but – well, let me go on. He says: "Rather, it is one that evolves complicated ethical and value judgments." He's speaking of the question of when life begins and he says it is one that involves complicated ethical and value judgments. You wouldn't agree with that statement, I take it? A. I must be very simple minded; but for me, as a biologist, I don't need any moral statement to question when the life of this given fly has started. It's not a philosophical of the moral statement.

Q. I appreciate the evidence – A. As a matter of fact –

Q. I appreciate the evidence you've given and you disagree with some of the statements? A. Yes.

Q. And he goes on to say – and I'm sure you would disagree with this statement – that he doubts whether the health sciences can shed much light on moral questions such as this? A. Oh, I think health science has to be known by moralists; but health science is not building moral, but the moralist cannot ignore health science.

Q. Now, you believe, Dr. Lejeune, that the question of when life begins is not a religious issue; am I correct? A. I would ponder my answer. It's a very important question, and I would tell you – I would tell My Lord what I answer to a question on that topic. I'll tell you the story because it's important. I was a member of the – I'm an member of the Pontifical Academy of Sciences. I was a member of the special delegation of the policy for the year of the population in Bucharest, and the whole delegation was asked to have a press conference. And during that press conference, I was asked by one of the reporters whether my position about the beginning of life, about the respect to the embryo, was related to the fact that I was Catholic. And I asked the permission of the bishop, who was our president, if I could answer freely and he told me, "You can answer freely." Obviously, he could not say anything else. And I said, "If" and I hope God will never permit that – "the Pope was saying that abortion was killing nobody, I would stop being a Catholic for scientific reasons" because no moral authority can make me believe that discarding an early human being is not discarding a human being. Now, you have what I feel.

Q. So you believe that it is not a religious issue? A. I believe religion has to take a great care of biology, but I believe biology knows enough to tell us it's a member of our kin.

Q. But it's not – when life begins is not a religious issue? A. Oh, no, it's a question of actual fact.

Q. And it's not a philosophical issue, in your view? A. It's very interesting for the philosophers, but the philosophers need to use the facts. Philosophy cannot be built out of the air.

Q. And it's not an ethical issue, I presume you would – A. It's very important for ethics because ethics will have to know what ethic is talking about; but it's not ethic who can tell us when an individual begins. We have to rely on facts.

Q. But it wouldn't be an ethical issue; that's your view, isn't it? You've said it's not a religious issue, it's not a philosophical issue, and it's not an ethical issue? A. I don't exactly mean – understand what meant issue –

Q. Well, when life begins is the issue I'm directing – A. It's a question.

Q. The question? The question is – A. You mean – when you say it's an ethical issue, I don't understand if it means that ethics has to give us the answer of that question or whether ethics should consider that question. Now, if your question is whether ethics should consider when life begins, yes, it should on the light of observation. Then it is an ethical issue which has to be based on fact. The same for the philosopher; the same for the religious. I understand very well that they are interested in that issue, but they must have the facts to discuss it.

Q. Well, having said that, would you then say that scientific arguments and scientific facts would be of enormous assistance to professors of ethics? A. Oh, certainly.

Q. Well, that – I wonder about that statement because Dr. Rosenberg refers to your Allen Award address, which I'm sure you remember very well, and you will – he quotes you on page 51, and he said that: "Even Professor Lejeune... allowed that 'scientific arguments are of little help in ethical issues!'" And I just want to be fair and just to get your belief down exactly on what your

feelings are? A. My Lord, the issue there, I referred to in the Allen Award lecture, was not when life starts. It was whether humanity must respect every member of our kin. And I said to that, biology can only tell us this yellow man is a member of your kin, this white man is a member of your kin, this tiny human being is a member of your kin; but biology cannot tell you. You have to respect them. That is the moral, that's the ethics who has to tell us that; but first we have to know whether the man in question is really a member of our kin, and that is scientific now. Later, moral will tell us you have to protect him, but that's moral. And in that case, I said – and I still persist on that – that no genetics, no biology, will tell you demonstratively, that it's not good to kill your enemy. That's moral; that's not science. But in that context, I said that.

Q. Now, I don't know whether you recall a certain gentleman at those same hearing, perhaps even the same day. One of the doctors – and I'm looking at page 53, for the benefit of my learned friend – said – and I think, in the main, he agreed with you. He was not a professor of genetics, but he said: "I know when human life beings" – this is Dr. Williams – "but I do not know when that group of cells becomes a human being; whether it is alive or not." So he says, "I know when human life begins, but I don't know when that group of cells becomes a human being"; so he seemed to be distinguishing between human life – which begins at conception, according to your evidence – and when that human life becomes a human being. Now, I take it again that you would disagree with that particular statement then? A. I would not disagree with the statement when he says "I don't know." Maybe he does not know.

Q. He also says, "I cannot answer the question." He says, "I know when human life begins." A. Yes, with that I would agree with him. A. And then he says, "I do not know when that group of cells becomes a human being". A. It's very possible that he does not know himself, so I would not disagree with the whole statement. Maybe he's right saying he does not know, but I would not say the same thing. I would say I'm sure that because this group of cells is surviving by its own virtue as a being and because it has the genetic endowment of human, it's a human being.

Q. And that cell, which I think is referred to as a conceptus the first several days – A. Could be.

Q. That clearly in your testimony is a human being? A. Yes.

Q. Would you refer to that cell – how large would that cell be? A. Around – at the beginning, the zona pellucida is one millimeter and a half.

Q. And that human – you say that cell is a human being, and that human being is a baby? A. I would not use the word 'baby'. I would use it a little later. For me, a baby is somebody I can have in my hand. It's a matter perhaps of discussions, you know, I would say it's a human being.

Q. When would that be approximately, Dr. Lejeune, when you would use the term 'baby' when you have a baby in your hands?

A. Oh, surely around several months. Tom Thumb is a tiny baby.

Q. Around – A. – two months, eight weeks.

Q. – eight weeks when you doctors use the term 'fetus'. A. Yes, fetus is a baby. Fetus, in Latin, means a heavy thing that you have to carry.

Q. Mr. Sojonky: I'm just wondering, My Lord, how long you wish to proceed this afternoon?

The Court: About how long do you propose to take?

Mr. Sojonky: I think I will be perhaps another hour.

The Court: Well, perhaps this is an appropriate time to adjourn.

Court adjourned at 5 pm, May 12th, 1983.

Court reconvened at 10:05 am, May 13th, 1983.

Q. Dr. Lejeune, I'm just trying to locate where we finished yesterday. With regard to the testimony that was given to the Subcommittee in Washington that we referred to yesterday, do you recall Dr. Lewis Thomas giving testimony? A. No.

Q. Now, are you aware who Dr. Thomas is? A. No, I don't remember.

Q. I'm referring to page 73 of the proceedings. He described, at 73, as the Chancellor, Memorial Sloan-Kettering Cancer Center in New York.

Dr. Shumiatcher: Dr. Lejeune would not have been there on that day; it's a much later day.

Mr. Sojonky: No, I appreciate that.

Q. And page 73 indicates, among other things, that he's served in various capacities at various universities, including dean of Yale School of Medicine. And of course, he was dealing with precisely the same question that was before the Committee on the Judiciary and that you addressed yourself to. Now –

Dr. Shumiatcher: Now, I think questions of this kind be put, My Lord – neither my learned friend was there, nor I –

The Court: Well, I don't know yet what his question is.

Dr. Shumiatcher; No, but I think it should be put then as simply a hypothesis.

The Court: Perhaps that's what he intends to do. The witness doesn't know the individual and was not there when he testified, so

Q. Now, it was Dr. Thomas's testimony as follows – and I'll just read you the statement:

Dr. Shumiatcher: What page?

Mr. Sojonky: Page 73.

Q. He says: "The question as to when human life begins, and whether the very first single cell that comes into existence after fertilization of an ovum represents in itself a human life, is not in any real sense a scientific question and cannot be answered by scientists." Now, I take it from your testimony, Dr. Lejuene, that you would disagree with that statement that he made? A. I would say it's not a scientific statement. If you say that something is outside science, it's not a scientific statement. It's a philosophical, theoretical, not scientific statement.

Q. Now, you would disagree with the statement, though, wouldn't you? A. I would say the statement is not scientific. I'm a scientist;

I'm talking about science. I'm not talking about philosophy.

Q. And you don't dispute that Dr. Lewis Thomas is a doctor and scientist?

Dr. Shumiatcher: Well, no, I think that's – A. I don't dispute that. You asked me about the statement. I said the statement is not a scientific statement.

Dr. Shumiatcher: Excuse me –

Q. And you disagree with that statement?

Dr. Shumiatcher: Excuse me, I have an objection, please, My

Lord, I don't wish it to appear in the record- and I'm certain Your Lordship will not take it – as an opinion of any person of any competence in the scientific field, having made the statements attributed to one Lewis Thomas, for purposes of this trial because my friend cannot, in this roundabout way, seek to establish another authority taking a different view; and by asking the witness as to whether he agrees with it or not, lend credence to the capacity or competence of whoever this Lewis Thomas is. I know nothing of him, Your Lordship doesn't, the witness doesn't, and I don't think my learned friend does. So that if he wishes to put it as a hypothesis, that's one thing; but to suggest that this is an authority and he invites the witness to contradict the authority, in my view, is improper.

The Court: I don't think he was suggesting for a moment that he had any authority other than what was set in the record.

Dr. Shumiatcher: Well, the record is not a record in this Court, My Lord.

The Court: But surely you're putting forth a witness, if he has asked

whether he agrees or disagrees with the proposition by someone who professes to be – I'm not accepting Mr. Sojonky's suggestion for a moment that this is an expert. He's not been pro-offered before this Court as an expert. He's merely asking the question whether he agrees with what this person says.

Dr. Shumiatcher: I have no objection whatever to the statement being put to the witness and soliciting his response to the statement, but he is not disagreeing with Dr. Lewis Thomas because we don't know who he is. I mean, this might have been plucked from the air. I have no objection –

The Court: Dr. Shumiatcher, I'm not really concerned at the moment whether you know who he is or not. The witness is being examined, not you.

Dr. Shumiatcher: Quite so, but I don't wish it to appear that my learned friend has paraded an authority under the name of Thomas that takes a different view than this witness.

The Court: This witness has already said, and I have noted, that he does not know Dr. Thomas; and one may only assume that he has

some credentials and all he's being asked is whether he agrees with the statement of this individual.

Dr. Shumiatcher: I have no objection to the statement being put forward as though it were Mr. Sojonky's.

Mr. Sojonky: The statement is not mine, My Lord. These are official transcripts of the hearings of the Sub-committee. The transcript of Dr. Lejeune is in the same proceedings and was filed yesterday as an exhibit. I think it's identical.

The Court: I think I want to make it clear the Dr. Lejeune was qualified by this Court as an expert. I don't know who that individual is and you may say that he is an expert. I don't know whether he is or not.

Q. Now, at page 73, as I indicated, Dr. Lejeune, Dr. Lewis Thomas indicated – it was indicated that he had served in various capacities, various universities, including dean of Yale School of Medicine. Now–

Dr. Shumiatcher: Well, My Lord, I don't believe my friend has realized what the nature of my objection is. That's exactly what I'm objecting to. Now, surely, My Lord, counsel for the Attorney General should be advised that that is not relevant and is improper to be put in the form of an introduction to a question.

The Court: Well, this witness doesn't know who the individual is. Certainly, it's proper to outline to him the concept in which this witness was making a statement on which Dr. Lejeune is being asked–

Dr. Shumiatcher: He's gone at great lengths to say what his qualifications are, dean of this –

The Court: Well, again, Dr. Shumiatcher, as I mentioned, that does not qualify him as an expert in this Court.

Mr. Sojonky: I'm describing Dr. Lewis Thomas.

Dr. Shumiatcher: Well, My Lord, that's exactly what I'm objecting to. My friend has no right to describe him as such. This is not a record which is receivable in this Court.

The Court: What Mr. Sojonky says is not evidence, Dr.

Shumiatcher.

Dr. Shumiatcher: Well, I don't think it should be put into a question, that's what –

The Court: Surely when you put a witness forward, you cannot confine the record to merely what you want this witness to say. He has not even answered the question at the moment. Only his answer is evidence, not what Mr. Sojonky says.

Mr. Sojonky: Thank you, My Lord.

Q. Now, Dr. Lejeune, you disagree with that statement that I read out to you; is that correct? A. I just said the statement is a philosophical statement. I'm not going to have any position on a philosophical statement.

Q. Assuming I agree with you – I mean, my contention is that it's not a philosophical statement, so I differ with you in that regard – but you do not agree with the statement? A. I said I'm not coming here, My Lord, to discuss philosophy. I'm a specialist in genetics. If I'm told something is not scientific, I cannot discuss about that.

Q. Well, Dr. Thomas, in his view, says that when a human life beings is not a scientific question. Do you disagree with that statement?

A. My Lord, I just repeat that saying that something is not scientific is non-scientific, then I cannot discuss a non-scientific thing.

Q. So you don't agree with the statement? A. I have not to agree or disagree with the statement when it's philosophical.

Mr. Sojonky: My Lord, the witness won't answer the question – A.

I've answered the question.

Mr. Sojonky: - it's as simple as that. I think it's quite clear I've put the question to him, "Do you disagree or agree with the statement," and he will not answer yes or no; and I'm asking Your Lordship to direct the witness to – A. Now, My Lordship, I answer to you that I believe, I consider, that the question, when a human being begins, is a scientific question. That is my answer.

Q. So having said that, you don't agree with Dr. Thomas when he says it is not a scientific question; that must be your answer then? That's a fair statement, is it not? A. That's a fixed point.

Q. I'm sorry? It's a fair statement? A. I would say the fair statement is I do consider that knowing when a human being begins is a scientific question.

Q. And Dr. Thomas says it is not a scientific question, therefore you disagree with him? A. I have never cross-examined Mr. Thomas, so I do not know him.

Q. No, but if Dr. Thomas says it is not a scientific question, you disagree with him? A. Apparently Dr. Thomas disagrees with me.

Q. Well –

The Court: Surely, Mr. Sojonky, you must have your answer by now. Mr. Sojonky: I think I do, My Lord, I just didn't think it would take so long.

Q. Now, Dr. Lejeune, I'm going on to further testimony given by Dr. Thomas at page 74, and he indicates that: "There are perhaps two criteria that I can think of for guessing at the stage in an embryo's development when the essential characteristics of a human being begin to emerge. One might be the start up of spontaneous integrated electrical activity in the brain. This might be interpreted as the beginning of human life, just as we take the cessation of such activity to indicate the end of human life. The second might be the appearance of those molecular signals or antigens at the surfaces of the embryonic cells which are the unequivocal markers of individuality and selfness. There is in this restricted immunological sense a stage in embryonic development at which the fetus becomes a specific individual. The time at which these events occur in the human embryo remains uncertain." Now, I will repeat that last statement: "The time at which these events occur in the human embryo remains uncertain." Do you agree with that statement of Dr. Thomas? A. Well, it's difficult to agree to something which is uncertain. I would say that the statement of some steps in this development do occur, there is no doubt; and I would say that with increase of the knowledge, we would be more precise about the moment. Now, when we speak about the molecules which are very typical of the genetic endowment of the early human being, they do appear at the moment of the cleavage of the first cell because at that moment there is already some RNA produced by both chromosome sets, maternal and paternal; and so that we have new molecules which

have never existed before in such a collection just at the very beginning of the human being, of any being. If it was a cattle being, I would say the same thing.

Q. So again, it appears that you don't agree with his statement that when these events occur in the human embryo remain uncertain?

A. Repeat the beginning of the phrases, please. It was by electrogenesis of the brain. That is known; it's around forty-five days. And for general recording of it, the progeny, they begin much earlier, and that's the reason why I suppose Mr. Thomas said it is uncertain. We're entirely certain that at forty-five days, the thing can be entirely detected. We're entirely certain that they begin earlier

than that, but, sir, they have not yet been precisely detected. I guess it's the reason why he used the word 'uncertain.'

Q. He goes on to say with regard to the two criteria that I just mentioned: "This is as far as I can see science making any contribution to the question of the point at which an embryo becomes a human self. It is a limited contribution at least and it tells us nothing about the personhood of a single cell." Now, just taking the first sentence, I would take it that your view would be that science can make a much larger contribution as to when an embryo becomes a human self because your view is that at conception there is a human self? A. My Lord, I think the difficulty here with the testimony I'm supposed to give on the testimony of Mr. Thomas, is that, as far as I understand, he does not speak about the genetic endowment, the genetic basis of the being. And then when he speaks about the various steps in the development, I have nothing to criticize. It's perfectly correct that the brain is progressively constructed, that the baby is growing; all that is perfectly true. What is important, to my point of view, is to discuss about what is the very nature of what is growing and then coming back to genetics, which is my field. And apparently this discussion is outside that –

Q. Dr. Thomas says that – you're in the field of science, Dr. Lejeune? A. Oh, yes.

Q. Dr. Thomas says that science can tell us nothing about the personhood of a cell. A. Now, I would if I was asking Mr.

Thomas, I would ask him whether science tells us something about the personhood of any person. Again, we are going outside the field of science.

Q. Well, I beg to differ with you. He says science can't tell us anything about the personhood of a cell, and you disagree? A. I would ask whether he's supposed to be saying there that science tells us something about the personhood of someone, and science does not tell anything about personhood of someone. There is no surprise. He does not say – does not tell anything about personhood of the early human being.

Q. Now, he goes on to quote a resolution from the National Academy of Sciences. You're familiar with the National Academy of Sciences? A. Yes, sir, I know it.

Q. And he indicates: "My own views on this matter are shared by many of my scientific colleagues." And in that statement at page 74, the National Academy of Sciences said, in the very last sentence of their statement: "Defining the time at which the developing embryo becomes a person must remain a matter of moral or religious value." Now, having heard what you said yesterday, Dr. Lejeune, I suppose you would disagree with that statement? A. I would stress, My Lord, I have never talked about person or personhood. I have talked about human being and I would say that a human being is there – and I will repeat- when all the genetic information necessary and sufficient is there. That is right from the beginning.

Q. And of course, given your evidence, the embryo is a human being; that's quite clear from your evidence? A. Oh, if the embryo is a human embryo, then it is a human being; no doubt.

Q. But you wouldn't go so far as to say it was a person? A. I said, My Lord, yesterday, to my understanding of English, that I would not call a baby, a new-born in the cradle, a person. In the ordinary language, I would not use that word. Maybe it's because my English is poor, but I guess most of the people do not talk about a baby as a person. Now, if I don't say that for a baby in the cradle, I have not any reason to use it earlier. A person is, of the common language used, somebody who can talk and speak and behave in a very complex way.

Q. But human being is a term used in the common language as

well – A. Very true. But a schoolboy is a human being, a soldier is a human being, an old man is a human being, a little girl, an old lady, and a human embryo; all of them are human beings. They are different words to express the same thing that they are members of our species.

Q. Now, you would then, in my view, disagree with that statement?

You would – could I go on to suggest that you would as well disagree with another statement?

Dr. Shumiatcher: Well, now, I wonder if my friend would not pose

double-barrelled questions. Let him-

Mr. Sojunky: I haven't asked the questions yet.

Dr. Shumiatcher: Well, you have prefaced it by, "You have, in my view, disagreed with this statement. Now I will go on to something

else." I think we should have a break in the sentence and put the question, if you have it, directly and clearly, please.

The Court: Well, Dr. Shumiatcher, I've granted you a good deal of leeway. If you're going to object to every phrasing of every question that Mr. Sojunky asks of this witness, perhaps we should go back to the beginning and talk about relevancy. Surely he's entitled to ask questions his own way, is he not?

Mr. Sjonky: We're in cross-examination; we're not in chief. I've objected from the beginning about the relevancy of all this evidence

and I continue to object throughout the trial.

Dr. Shumiatcher: I have no objection to my friend leading questions, the usual things of that sort, but –

The Court: Well, if you're going to continue to object, then let's get down to the ground rules. I mean, that's my question. Are you going to object – you're now objecting to the manner in which he phrases his questions now. Are we agreed to get down to the basic rules and, if we are, then I'd start afresh. I'd assumed, since I granted you leeway, that you would have no objection to these learned individuals being asked questions in their field of expertise.

Dr. Shumiatcher: Well –

The Court: Is that your concern?

Dr. Shumiatcher: Well, I'm concerned about a misunderstanding in this situation. I don't mind how the questions are put in the case of Dr. Liley, whose first language is English. I think it's a different question when the witness' second language or adopted language, is any event, is English. And I don't think – I think they should be put clearly and distinctly, especially –

The Court: You're pro-offering these people as experts and now you're intervening to say it's unfair before the witness can even answer the question or be asked to answer the question. Now –

Dr. Shumiatcher: I don't think the question – I think the question is incomprehensible in the form –

The Court: It may be to you, but you're not the witness. If the witness –

Dr. Shumiatcher: Well, I'm sure if it's incomprehensible to me –

The Court: - says so, then fine. He seems to be able to understand the questions because –

Mr. Sojonky: I don't think he's having any difficulty understanding the questions –

Dr. Shumiatcher: They are the most obscure I've heard in the courtroom –

The Court: Well, it may be, but you're not the witness, Dr. Shumiatcher.

Dr. Shumiatcher: All right, My Lord.

Q. Now, Dr. Lejeune, there was another doctor in this parade of doctors in Washington who gave testimony. Page 77, there was a Dr. James Neel, Department of Human Genetics, University of Michigan Medical School, Ann Arbor, Michigan. And he addressed himself to this question as to when life begins. And he found it difficult – I'm referring to page 77 – to state- as a scientist, as he indicated – in early fetal development, when human personhood begins. And the statement I wish to read to you in at page 78, and he said: "In other words, I can find no biological basis for saying at exactly what stage in development human personhood begins." Now, your evidence, I think it's fair to say, is that there is a biological basis to indicate when human personhood

or, to use your word, a human being begins, and you say it's at conception, of course. A. My Lord, I think that you are just coming precisely to the signification of the words; that really, the scientific discussion is: when does a human being begin? In that case, obviously at its conception. That's my answer.

Q. And you would disagree then with Dr. Neel, who says, "I find no biological basis"? A. I would not disagree with Mr. Neel, whom I know very well. Maybe he does not find the basis himself. Maybe he does not realize – that's his opinion about his own judgment. I have not to judge that.

Q. He says as well: "The definition of that moment" – and he's obviously referring to when personhood begins. He says: "The definition of that moment is a matter of religious conviction, philosophical inclination, or legal necessity." Now, you wouldn't agree with that; you would say it's a scientific question? A. I would say that the question, when a human being begins, is a scientific question, correct.

Q. Thank you. Now, it's clear from your testimony, Dr. Lejeune, that you believe that it's your opinion that at conception there is a – there exists a living cell; is that correct? A. There is more than that.

Q. Well, if we can just stop there, though. A living cell exists, in your opinion. A. Yes.

Q. And secondly, in your opinion, it's a human living cell? A. That's not my opinion; it's a fact. You're talking about a human cell or what?

Q. It's a human living cell. A. Human living cell.

Q. And I think it's also clear, given your evidence now, that this living cell is a product of fertilization of the human egg and the human sperm. A. Yes.

Q. Now, I take it that then you go on to say that this living cell is a human being? A. My Lord, I have to be clear on that. I'm not going on. That's the cell which is going on to be a human being; it's

not me. It's a fact. It's not my will that this cell is dividing and producing the form that everyone can recognize. That's not my postulate. It's what that cell does.

Q. Well, you describe that cell as a human being? A. that cell is a human being, this being is human, then it is a human being.

Q. Now, is that a genetic definition? A. I guess it's the best genetic definition we have. If you have a better one –

Q. Now, you referred to the fertilization in vitro yesterday? A. Yes.

Q. And as I understand it, that literally one is taking the egg and the sperm and fertilizing takes place in a glass. I gather that's what in vitro means really. And of course, as you've indicated, in others that is taking place these days. And when a cell is produced in vitro, you would say that that cell in the glass is a human being? A. I would because it is. Now, My Lord, may I make a personal statement. That is, it's very comprehensible that many people have difficulties to really understand that thing which is close to a miracle, but which is really true; that at the very beginning, all the properties which will later be expressed as someone, a member of our species, are really reduced to that extraordinary simple expression. It's difficult to believe, but that is the basics of genetic science. And I understand that people can have difficulty to grasp this extraordinary phenomenon, but it's the same thing in many other parts of science. It's very difficult to make people understand what are protons, what are electrons, what records inside the protons and nevertheless, that is science. And I understand very easily why all of those testimonies that you have recorded ask themselves questions because we're in front of an extremely extraordinary fact of life; surprising, but it's there.

Q. Now, that cell in vitro, before you made your statement that that's a human being, in your view, and you would make no distinction between what you describe as a human being and the other living cell in the woman? You would describe both as human beings, correct? A. I don't understand your question.

A. Well, the cell that is developed as a result of fertilization in vitro, in your view, is no different than the living cell that is developed in the woman's womb? A. Oh, you are talking about the same stage.

Q. Yes. A. Just after fecundation in the fallopian tube or in the glassware tube?

Q. Yes. A. Yes, it's the same human being.

Q. And if there was destruction of this product in vitro, I presume that you would say, from giving your evidence, that this, in fact, would be an abortion as well? A. I would not call it an abortion because abortion is to reject outside the body. It's not in a body, then it can't be an abortion.

Q. How would you describe it? A. As a tiny homicide, killing a human being.

Q. As a tiny homicide? A. A homicide on a tiny human being.

Mr. Sojunky: Thank you, Dr. Lejeune, I have no further questions.

The Court: Any re-examination?

Dr. Shumiatcher: Just a moment, My Lord.

Dr. Shumiatcher Re-examining:

Q. Dr. Lejeune, my learned friend yesterday was questioning you about the term 'potential human being'. Is there such a term in scientific parlance? A. My Lord, I have never seen that word in the textbooks of genetics.

Q. In your view, does the word 'potential' genetically contradict the

words 'human being'? A. It's a very difficult question really because we do not use really 'potential' in science. We use it for electric potentials which are amount of electricity on a given phenomenon. That is a very different signification. And I suppose we are dealing here with the philosophical contention that something is already there and not yet entirely there. It's very difficult for me to discuss those very outside-my-field concept. I would be much more matter of fact saying that as soon as the genetic information which is – I repeat again – entirely both necessary and sufficient is at work, then the new being begins to express itself and then it grows; it forms the outside feature that we can recognize and, in the long run, it finishes its career with senility. But it is the same being, from its conception up to its death, which is developing himself. Hence, if you could say so, the child is a potential of a teenager.

Q. Of the which? A. Of the teenager. The teenager is a potential of the adult; the adult is a potential of the old man, but I don't understand what that meaning of potential. There is the same human being in a different stage of his life. Then I don't see any

use of this word 'potential'. He is actually a human being developing

himself from his very beginning up to his finished life.

Q. Thank you. In your view, is human personhood a scientific term?

A. It's very difficult for me, My Lord. If I was speaking in French,

I would say personnalite for personhood. I think it's more or less equivalent. Any personality is something which is defined by psychologists, by literature, by common sense; but which is not defined in terms of being a member of our species. It is supposed first. And then I prefer to speak about the things I know really because it's my own field, about whether this given being is a member of our species or not. Now, maybe he has the various personality, various personhood, during his development. The personhood, I suppose, of a baby, of a suckling, is probably not equivalent to the personhood of a member of a university. I don't know that, but what I know is that in both steps of development, it's the same human being. And then the question of personhood is, if it is equivalent to the concept of human being, obviously personhood is at the very beginning. If it is a psychological description of a person, then personhood is very different in an embryo, in a baby, in a schoolboy, in a soldier, in an old man; but it does not change anything because all of them are just the same being.

Q. Which is what? Which is, in the case we are discussing, a human being.

Q. I appreciate that you don't know this person, James Neel, spelled N-E-E-L by the way. A. I know James Neel.

Q. I'm sorry, yes. A. It was Thomas –

Q. I'm sorry, it was Thomas, excuse me. A. But I must say, My Lord, maybe Mr. Thomas can be very competent. It's not because I do not know him that I consider he's not competent. It's not relationship to my judgment of him.

Dr. Shumiatcher: Well, my friend and I just agreed that at this point it might be appropriate for me simply to read the heading describing –

Mr. Sojonky: Well, it's a quibble, but my friend wanted to read it

in

and I had no objections.

Dr. Shumiatcher: Well, I think that that's concurrence, I don't know-

Mr. Sojonky: I mean –

Dr. Shumiatcher: - consent, shall we say, conformed –

Mr. Sojonky: I thought you were objecting to me reading it in the first place.

Dr. Shumiatcher: Of course, but I just think that Your Lordship should know this is a statement of Dr. Lewis Thomas, who's described as Chancellor, Memorial Sloan-Kettering Cancer Centre, New York, New York.

Mr. Sojonky: Oh, well, then I thought you were reading the other statement.

Dr. Shumiatcher: No, I just wanted to –

Mr. Sojonky: Well, then let's read in his prior description, that paragraph there:

Dr. Shumiatcher: All right. "Dr. Lewis Thomas, our first witness, has received degrees at eleven major universities, including Harvard,

Yale, Princeton, and Johns Hopkins. He has served in various capacities at numerous universities and institutes, including as dean

of Yale School of Medicine and as president of the Memorial Sloan-Kettering Cancer Center. He is the author of two best-selling

paperbacks: 'Lives of a Cell' and 'Medusa and the Snail.'" Does that satisfy you?

Mr. Sojonky: M'hm.

Dr. Shumiatcher: Thanks for drawing my attention to that. Those are all my questions. I thank you, Dr. Lejeune.

The Court: Thank you, Doctor.



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Dr. Jerome Lejeune died on Easter Sunday, April 3, 1994. He is most remembered for discovering the chromosomal abnormality that causes Down syndrome. In his expert testimony during the Trial for Life, he explained that the life of each individual new human being “begins at the instant that all the necessary and sufficient information is combined in order to define the new being. That is right from the beginning.”

Dr. Lejeune was appointed the first president of the Pontifical Academy for Life by Pope John Paul II in 1994. His cause for beatification has been suggested by Cardinal Fiorenzo Angelini, the President Emeritus of Pastoral Assistance to Health Care Workers, who said of him that "he was a man of science who lived his Christian faith in his professional work heroically, showing his faith with a simplicity and joy, serving life with a full devotion and complete disinterest." - [www.ncbcenter.org](http://www.ncbcenter.org)