

EXCERPT FROM CAUSE FOR JUSTICE EXPERT AFFIDAVIT OF DR J LA

GRANGE:

Voice of the Unborn Baby NPC v Minister of Home Affairs and Minister of Health

Is the unborn child both human and living?

5. Biologically, fertilization (or conception) is the start of human development. This usually occurs within several hours of ovulation.

6. Fertilization begins with the spermatozoon contacting the cells surrounding the oocyte and ends with the mixing of the twenty-three male and twenty-three female chromosomes. The result is a single-cell zygote. This is the first cell of the human body. This has pluripotential characteristics meaning it can now divide into all the different cells required to form an embryo, fetus and eventually a baby.

7. The zygote is encased in a protective casing called the zona pellucida and contains forty-six unique chromosomes with the entire genetic blueprint of a new individual.

8. One of the fundamental principles of modern biology is that life is continuous, with living cells birthing new cells, and ultimately, new cells forming new individuals.

9. To ascertain when a new life has been formed in the context of the unborn, one has to first answer the fundamental question of whether a new cell, distinct from the sperm and egg cell, comes into existence.
10. The scientific basis for distinguishing between cell types rests on two criteria: the difference in what the cells are made of and the difference in how the cell behaves.
11. These two criteria are universally agreed upon and used throughout the scientific community.
12. Off these criteria it can reasonably be concluded that the fusion of the sperm and egg cell form a new cell type, the zygote.
13. This new cell, the zygote, has elements of both the sperm and egg cell and thus its molecular composition is distinct from either gamete.
14. The zygote coming into existence from the sperm-egg fusion thus satisfies the first scientific criterion, that the new cell's molecular composition is unique from the cells which gave rise to it.
15. After the sperm-egg fusion, the zygote acts differently from the sperm or egg cell.
16. Within minutes, the zygote initiates a change that will, in the subsequent thirty minutes, block any further sperm cells from attaching itself to the cell surface.

17. Thus, the zygote acts inversely to the function of the gametes from which it is derived.

While the function of the sperm and egg cells are to find one another and fuse, the zygote blocks any further sperm cell from binding to the cell surface.

18. This is clearly a new behaviour being performed by the zygote and as a result, the second scientific criterion has been satisfied.

19. The question is then whether the zygote is merely a human cell, or whether it is an *organism*.

20. Both cells and organisms are alive, however an organism has completely new characteristics which distinguishes it from other cells.

21. According to the Merriam-Webster dictionary, an organism is defined as “(1) a complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole and (2) an individual constituted to carry on the activities of life by means of organs separate in function but mutually dependent: a living being.”

22. As we can see above, an organism is a complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole.

23. Further, organisms are “living beings”, therefore another name for a human organism is a “human being”, an entity that is a complete human.

24. A human being contains a variety of parts such as, *inter alia*, cells, proteins, RNA (ribonucleic acid), and DNA (deoxyribonucleic acid), but is different to a mere collection of cells in that it has the molecular make-up and behavior of an organism, which acts in an interdependent and coordinated manner.
25. A human embryo, from as early as the single-celled (zygote) stage, shows uniquely integrated, organismal behavior that is unique to any other human cells.
26. The zygote produces intricate tissues, structures and organs that function together for its further development (refer back to its pluripotent ability described in paragraph 6).
27. What must further be noted here is that the cells, tissues and organs produced during development are produced by the zygote and then the embryo itself and it directs its own development to the later stages of human life.
28. The activity of the embryo in such an organized way is the very definition of what a human organism is.
29. The conclusion I reach is that human life begins at the sperm-egg fusion, a fact which is uncontested, objective, and based on universally accepted scientific methods of distinguishing cell types from one another, and on an abundance of evidence, and in the circumstances, I consider that an unborn child is a living human being from that moment onwards.

The development of the unborn child at various stages of gestation

30. The gestation development period described below is in line with the well-established medical practice of determining the due date of the unborn child from the beginning of the mother's last menstrual cycle (prior to conception). This differs from the Births and Deaths Registration Act 51 of 1992, which only recognizes existence once the zygote is intra-uterine (i.e. the zygote is physically in the uterus).
31. As shown below, the intra-uterine existence only commences towards the end of week two / beginning of week three. In the circumstances, where the Births and Deaths Registration Act refers to twenty-six weeks of intra-uterine existence, this is effectively twenty-eight weeks according to the commonly understood gestation development period.
32. I now turn to describe how the unborn child develops from week one to week twenty-eight (ie twenty-six weeks of intra-uterine existence). I do so in order that this Court is able to appreciate the nature of the prenatal human life which the law, as it stands, will have disposed of as medical waste.
33. During the first week the egg is waiting to be released so that the sperm cell can find its way to it.
34. At week two fertilization begins, which normally occurs within several hours of ovulation. Fertilization takes between twelve to twenty-four hours to occur. This process is extremely complex and leads to a new human life as explained above already.

Over the next several days the fertilized eggs will divide into multiple cells, travel through the fallopian tubes, enter the uterus and start to burrow in to the uterine lining.

35. At week three, implantation occurs. A microscopic ball of cells, rapidly multiplying, is nestled in the nutrient-rich lining of the uterus. This ball of cells is called a blastocyst and has begun to produce the pregnancy hormone HCG (Human Chorionic Gonadotropin) which tells the ovaries to stop releasing eggs.
36. During the fourth week, the embryo has now formed.
37. At five weeks, the unborn child is growing fast and has transformed into what looks similar to a tadpole structure. The circulatory system is beginning to form, and the first heart beat will commence.
38. At six weeks, the unborn child's nose, mouth and ears are starting to take form and the intestines and brains are starting to develop.
39. At seven weeks, the unborn child has doubled in size from the previous week. Hands and feet start to take form, emerging from the developing arms and legs. The fetal heart is now often detectable on some ultrasound machines.
40. At eight weeks, the unborn child is starting to form nerve cells which are branching out, forming primitive neural pathways. Breathing tubes then extend from the unborn child's throat to his or her developing lungs. The unborn child also starts moving around at this point. All fetus' viability should be detectable by heartbeat at ultrasound.

41. At nine weeks, the unborn child's physiology is in place and is starting to gain weight fast.
42. At ten weeks, the unborn child has completed the most crucial part of development. Small limbs can bend and finer details like nails are starting to form.
43. At eleven weeks, the unborn child is almost fully formed. Kicking is experienced by the unborn child and even actions such as hiccups can occur as the diaphragm develops.
44. At twelve weeks, the unborn child's reflexes activate. The fingers will soon be able to open and close and toes will curl. The mouth will also make a suction movement. At this stage, should the mother poke her stomach gently, the unborn child will feel it.
45. At thirteen weeks. The unborn child's fingers now have fingerprints and veins and organs are clearly visible through the unborn child's skin. If the unborn child is a female, her ovaries would contain more than two million eggs. A filled bladder and stomach is detectable on ultrasound implying a patent oesophagus and functioning kidneys.
46. At fourteen weeks, the unborn child's brain impulses have begun to perform, and is using his or her facial muscles. The unborn child's kidneys are now also working. It is usually possible to ascertain fetal sex on ultrasound in most cases.
47. At fifteen weeks, the unborn child's eyelids are still fused shut but he or she can sense light. If one were to shine a flashlight on the mother's stomach, the unborn child will

move away from the beam. At this stage the gender of the unborn child may also be ascertained.

48. At sixteen weeks, patterning on the unborn child's scalp has begun, though hair is not visible just yet. The legs are more developed and often this is the stage from when the mother may feel some kicking. The head is also more upright, and ears are closer to their final position.

49. At twenty-one weeks, the unborn child can conduct fully performed kicks and jabs against the walls of the womb.

50. At twenty-two weeks, lips and eyebrows are distinct. The unborn child looks like a smaller version of a newborn baby.

51. At twenty-three weeks, the unborn child's hearing develops more and is better at picking up sounds. After birth, the child might be able to recognize sounds which it was hearing inside the womb.

52. At twenty-four weeks the skin is still thin and translucent, but the unborn child has increased in length and is fairly lean at this point.

53. At twenty-five weeks, the unborn child is starting to gain weight and wrinkled skin is starting to fill with 'baby fat'. The hair also starts to grow and has colour and texture to it.

54. At twenty-six weeks, the unborn child is now inhaling and exhaling amniotic fluid, which helps develop the lungs. In some first world countries the fetus is seen as viable and with intensive ICU care prognosis is seen as fair.
55. At twenty-seven weeks, the mother enters her last week of the second trimester. The unborn child sleeps and wakes up at regular intervals and his or her brain is increasingly active. The unborn child's lungs are not fully formed just yet, but the child could survive outside of the womb with medical assistance.
56. At twenty-eight weeks, the unborn baby's eyesight is developing, which may enable him or her to sense light from outside the womb. The unborn child will be able to blink and his or her eyelashes would have grown in.
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