

## HEALTH & SCIENCE

### FETAL DEVELOPMENT SCIENCE



Paul Stark, a member of Minnesota Citizens Concerned for Life, wrote an opinion piece at LifeNews.com (10/8/15) and stated, “Before deciding how we ought to treat the unborn – a moral question – we must first be clear about what the unborn is. This is a scientific question, and it is answered with clarity by the science of human embryology.” Stark wrote that the facts of reproduction are clear. At fertilization, the sperm and egg cease to exist. ‘Fertilized egg’ is an inaccurate term. A zygote – a single cell with 46 chromosomes (23 from each parent) is what exists. This is the point of conception – the beginning of a new human organism. Zygote, embryo and fetus refer to the developmental stages of a human being.

Stark continued by pointing out the “four features of the unborn (i.e., the human zygote, embryo or fetus) [which] are relevant to his/her status as a human being. First, the unborn is living. She meets all the biological criteria for life: metabolism, cellular reproduction and reaction to stimuli. Moreover, she is clearly growing, and dead things (of course) don’t grow. Second, the unborn is human. She possesses a human genetic signature that proves this beyond any doubt...Living things do not become something different as they grow and mature; rather, they develop the way that they do precisely because of the kind of being that they are. Third, the unborn is genetically and functionally distinct from (though dependent on and resting inside of) the pregnant woman. Her growth and maturation are internally directed, and her DNA is unique and different from that of any other cell in the woman’s body. She develops her own arms, legs, brain, central nervous system, etc. To say that a fetus is part of the pregnant woman’s body is to say that the woman has four arms and four legs.... Fourth, the unborn is a whole or complete (though immature) organism. That is, she is not a mere part of another living thing, but is her own organism – an entity whose parts work together in a self-integrated fashion to bring the whole to maturity. Her genetic information is fully present at conception, determining to a large extent her physical characteristics (including sex, eye color, skin color, bone structure, etc.); she needs only a suitable environment and nutrition to develop herself through the different stages of human life. Thus, the unborn is a distinct, living and whole human organism – a full-fledged member of the species *Homo sapiens*, like you and me, only at a much earlier stage in her development. She is a human being.”

Leading scientists and embryology textbooks confirm this fact. Stark acknowledged that the texts and individuals could be cited “ad nauseam”. One of the most widely used embryology texts, *The Developing Human: Clinically Oriented Embryology* by Keith L. Moore and T.V.N. Persaud, states, “Human development begins at fertilization when a male gamete or sperm (spermatozoon) unites with a female gamete or oocyte (ovum) to form a single cell – a zygote. This highly specialized, totipotent cell marked the beginning of each of us as a unique individual.” Dr. Micheline Matthews-Roth of Harvard Medical School stated, “It is

scientifically correct to say that an individual human life begins at conception, when egg and sperm join to form the zygote, and this developing human is always a member of our species in all stages of its life.” After hearing expert testimony, the official report of a 1981 US Senate judiciary subcommittee stated, “Physicians, biologists, and other scientists agree that conception marks the beginning of the life of a human being – a being that is alive and is a member of the human species. There is overwhelming agreement on this point in countless medical, biological, and scientific writings...no witness...raised any evidence to refute the biological fact that from the moment of conception there exists a distinct individual being who is alive and is of the human species.”

Stark stated that the claim “no one knows when life begins” is repeated so often that it must be addressed. He acknowledges that there is “debate about when a human being becomes (if she isn’t by nature) valuable and deserving of full moral respect.” However, “the strictly biological matter is clear...The life of a human being...begins at conception.” The argument that sperm and egg are also human because they have the *potential* to become a child is “bad biology. The sperm and egg are simply parts of larger organisms. When they unite they cease to be and something new comes into existence: the zygote, a whole organism with the active capacity to develop into a mature member of its species, given only a suitable environment and nutrition. Each of us was once a zygote, but none of us was ever a sperm or egg.”

There are those who compare the zygote or embryo to other somatic cells which are human, living and possess a full genetic code. But these cells are not actual human beings. There is a critical difference between body cells such as skin cells and a zygote or embryo. The zygote or embryo “is a distinct and complete individual whose parts work together in a coordinated fashion to develop the whole to maturity.” Skin cells and other somatic cells “function as mere parts of a larger organism.” Another argument that is made is that since very early embryos can split into two distinct embryos (twining) then the early embryo is not a unitary individual. Stark noted that if a flatworm is cut in half, or an organism is cloned, “a single organism gives rise to two distinct organisms. In both cases the original entity is a unitary, self-integrating, whole individual. The scientific evidence shows that the embryo likewise functions as its own organism, from the zygote stage forward, regardless of whether twinning occurs.” There are also those who claim that human life doesn’t begin until the unborn develops a brain. Stark argued, “brain death is accepted as a criterion only because it signals the end of the body’s ability to function as an integrated organism, for which the brain, in older humans, is essential. After brain death there is no longer a unitary organism. By contrast, the embryo is a unitary organism from conception, actively developing to the next stage of human life. The brain, at this earliest stage, is not yet necessary for her to function as such.”

Stark concluded, “Because the scientific facts are clear, the permissibility of taking human life hinges on a moral question. Do all human beings merit full moral respect and protection, ...or only some?”

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