



## The Missing Science

Did you know that when a human being begins to exist is a scientific issue and not a philosophical or religious one? And, that the science on this question has been settled for a long time? Did you also know that the scientific experts to ask about this fundamental question are those in the science of Human Embryology?

Most people do not know the basic, accurate scientific facts about when a human being normally begins to exist. Even though, for over 100 years it has been known and documented that in human sexual reproduction a new human being starts to exist at the *beginning of the process of fertilization*.

One of the main reasons the basic “facts of life” are so confusing today is because of the Roe v. Wade court ruling on abortion. Justice Blackmun wrote, in his majority opinion, that the beginning of human life could not be determined, saying the “disciplines of medicine, philosophy and theology” were “unable to arrive at any consensus”, and “we need not resolve the difficult question of when life begins.”

It is not widely known that the academic disciplines Blackmun referenced have no bearing on the science of Human Embryology. Human Embryology is the only scientific field that specializes in when a human being begins and its early development, particularly that of the human embryo. No human embryologists testified during the Roe v. Wade case.

Most people do not know that Justice Blackmun conflated the biological with the philosophical. When a “*human being*” begins to exist is a scientific issue. In contrast, when a “*human person*” begins to exist is a philosophical issue. The philosophical question must depend on what the scientific fact is, and not the other way around. The accurate science is the very starting point for resolving the philosophical question. As noted for centuries, "A small error in the beginning leads to a multitude of errors in the end."

And so, because so many inaccurate scientific facts of Human Embryology have been disseminated, many people today still believe that the science is not settled.

We want to change this deeply harmful trend. Contend Projects is working to make the internationally acknowledged empirical scientific fact of when a human being normally begins simple, accessible and relevant for everyone.

The good news is that human reproductive processes are well-established scientific facts. When a human being begins to exist is an objective, empirical and modern scientific fact of Human Embryology. It was instituted in 1942 by the National Museum of Health and Medicine’s Human Developmental Anatomy Center (which is part of the National Library of Medicine, which is part of the National Institutes of Health) as the Carnegie Stages of Early Human Embryonic Development, and the Carnegie Stages continue to be reviewed and verified by a global committee of experts in Human Embryology, and validated as the gold standard.



**Below are six essential scientific “facts of life”:**

- 1.) Academic credentials matter. The only genuine academic experts in the scientific “facts of life” are human embryologists who have taken specific doctoral level course work in Human Embryology. Note too that every genuine Human Embryology textbook is professionally required to contain the full chart of the Carnegie Stages, and use superscripts on critical terms being used “simplistically” for students so that the students can go to the correct stage and find out more specifics. Those with M.D. degrees, or degrees in developmental biology, or neurology, etc., take totally different course work, with little or no focus (much less degrees) in Human Embryology. They are academically unqualified to testify about the accurate scientific facts of Human Embryology.
- 2.) A new, whole, individual, living human being normally begins to exist at the beginning of the process of fertilization (Carnegie Stage 1a), at “first contact” of the sperm and the oocyte/“egg” (first contact between the plasma membrane of the sperm and the plasma membrane of the oocyte). When these two mere cells make first contact and fuse, immediately specific human proteins and enzymes are produced (not sperm or oocyte proteins and enzymes), and a new single-cell human being, with his or her own new, unique human genome and complete set of DNA begins to exist.
- 3.) Fertilization occurs in vivo (within the woman's body) in the fallopian tube, not the uterus or “womb”, as well as in vitro in petri dishes outside the woman's body in IVF/ART facilities.
- 4.) Normal pregnancy begins when a new human being begins to exist, at the beginning of the process of fertilization in a woman's fallopian tube.
- 5.) A new human being could begin to exist (and pregnancy could begin) within hours of sexual intercourse.
- 6.) The Continuum of Human Life is also initiated at first contact. The continuum of human life is a biological fact that states at any point in time from the very beginning of human reproduction until death, there exists the same, whole, individual human being (simply at different phases of development). There is no moment along the entire continuum when there is just a “bunch of cells”, and then suddenly there is a whole human organism – a human being. To devalue a human being based upon certain developmental milestones along the continuum is strictly arbitrary (a philosophical issue), and not rooted in science.

While there are many subjective personal and political issues that are informed by this scientific fact, when a human being begins is not a matter of opinion (even when it is the Supreme Court's) or something up for debate. An accurate understanding of the science should be the very starting point for shaping positions, decisions, policies and laws concerning a human embryo, a human fetus and every other stage of human development.

Contend Projects is dedicated to elevating basic science education, and empowering people to make informed decisions about the many issues related to this important and missing science.

To learn more please visit the Contend Projects website [www.contendprojects.org](http://www.contendprojects.org) or email your specific science query to [info@contendprojects.org](mailto:info@contendprojects.org) with “Ask The Expert” as the subject. Thank you for your support and interest in spreading the accurate scientific “facts of life”.