



# WANT TO KNOW MORE?

## Pregnancy

A woman’s pregnancy begins with the implantation of a fertilized egg in the uterus and ends, under normal circumstances, approximately nine months later with the birth of the child. However, in medicine, the duration of a pregnancy is not counted from the time of implantation but the first day of the last menstruation, mainly because a woman is not aware that implantation takes place but can usually remember the date of the last menstruation. Instead

of adding 280 days from this day to determine the due date, the day of birth can be determined much easier using the following rule of thumb: “first day of the last menstruation” + 7, “month of the last menstruation” – 3. An example: The first day of the last menstruation was December 10<sup>th</sup>. After adding seven days and subtracting three months, the due date is September 17<sup>th</sup>

## A fascinating growth process

The exact details of the process that takes place in a woman’s body up to the birth of a child have not yet been fully researched. However, the sequence of the most important processes can be described: even without getting lost in too many details, figure 1 clearly illustrates the phenomenon of evolution. The early stages of development of living beings seem to be similar. Humans do not go through what is sometimes referred to as an “amphibian stage” but are provided with the “genetic human fingerprint” and their complete individual blueprint from the moment of fertilization. Having proven itself in evolution, the different characteristics of body parts in mammals always develop in the same order. Nonetheless, the required duration varies from species to species. The gestation period in humans as the “crown of creation” is not the longest among mammals. The human gestation period of 280 days is quite short in comparison to the elephant’s gestation period of 660 days.

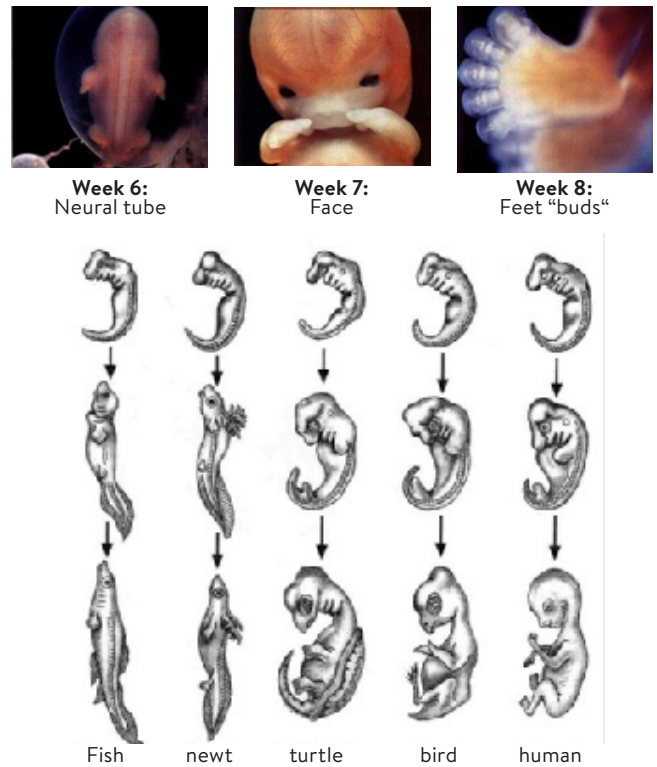


Fig. 1: Early stages of development of various living beings.

## Semi-identical twins

For the first time, in 2007, American researchers described a hybrid form of identical and fraternal twins: the siblings share the same genetic information on the maternal side whereas they only share a proportion of their father’s genetic information. As Vivienne Souter’s team suspects, in the case of these twins, two of the father’s sperm fertilized a mother’s single egg at the same time, which then divided and developed into two embryos. In humans, an egg cell is occasionally

fertilized by two sperm at the same time. However, the resulting embryo is usually not viable and only a few children are born with different genetic information in different tissues of their body. In the case described by Souter, two rare developments occurred simultaneously: a “double-fertilized” egg cell probably divided into two embryos shortly after fertilization, as is the case with identical twins.



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#### “Double standards”?

On the one hand: In Germany, abortion is permitted up to the 12th week of pregnancy and with the parents' approval excess fertilized egg cells are destroyed after successful artificial insemination. On the other hand: stem cell research is only permitted to a limited extent with imported stem cell lines. A possible way out: “Fertilization“ without sperm. With a new process, researchers want to obtain “ethically unproblematic” stem cells and make artificial insemination more successful. A trick makes human egg cells divide as if they had been fertilized by sperm. After four or five days with 50 to 100 cells, they reach a stage, in which theoretically they should contain

the much sought-after stem cells, as reported by the “NewScientist”. The advantage: scientists argue that they could be obtained without ethical concerns because the “embryos” from these egg cells could not develop into children. In contrast to normal human embryos, they do not contain paternal chromosomes, only maternal ones. Therefore, they do not need to be viewed as potential human life, according to Karl Swann of the University of Wales College of Medicine. The scientists induced the egg cell's cell division by injecting PLC-zeta, which is an enzyme produced by sperm. Swann describes the PLC-zeta as the “spark of life”, signaling to the egg that it has been fertilized.

#### Are we going extinct?

Impending negative record: scientific studies have shown that over the past 50 years the sperm count in healthy men has decreased by approximately 50 percent. The following applies: the younger the men, the

lower the chance of paternity. Men born after 1980 often hit the negative record of just 20 million sperm. For the World Health Organization (WHO) this is the limit of fertility.

#### Strange superstitions

In the past, people believed that certain characteristics of children developed through the expecting mother's behavior during pregnancy. If the expecting mother did not go to the theater and only looked at beautiful people, she would give birth to a beautiful child. If she was frightened and

touched a part of her body, her child would be born with a birthmark. A “port-wine stain” would develop, if the expecting mother was frightened by fire. If she was pinched, her child would have moles. If the mother cried a lot during pregnancy, her child would also cry a lot.