

## 1. Human Embryonic Development

### Human Embryonic Development

The human zygote develops through \_\_\_\_\_ main \_\_\_\_\_ . Human \_\_\_\_\_ (before birth) development \_\_\_\_\_ when \_\_\_\_\_ occurs. Fertilization occurs when the male and the female gamete combine their nuclei together to make a zygote. There are a number of ways in which fertilization can occur; there are reproductive technologies that exist which may aid in this process.

- In the first \_\_\_\_\_ hours, the zygote divides through \_\_\_\_\_ and eventually becomes a \_\_\_\_\_
- Cell division continues rapidly
- The dividing cells travels and implants to the lining of the \_\_\_\_\_



Human prenatal development occurs in two stages:

- \_\_\_\_\_ stage: first 8 weeks
- \_\_\_\_\_ stage: 30 weeks

In total, it takes approximately \_\_\_\_\_ weeks from \_\_\_\_\_ to \_\_\_\_\_.

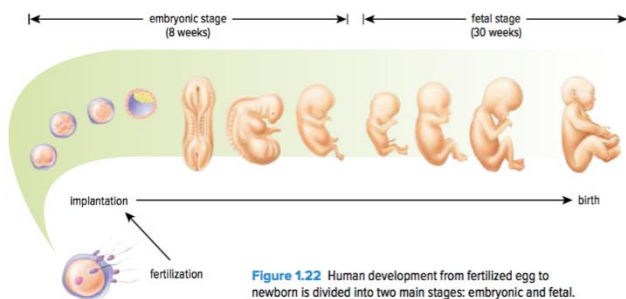


Figure 1.22 Human development from fertilized egg to newborn is divided into two main stages: embryonic and fetal.

Table 1.2 Human Prenatal Development

Month	Mass at End of Month (g)	Some Key Developments
1	< 1	<ul style="list-style-type: none"> <li>Spinal column and central nervous system start to form</li> <li>Appendages are represented by small limb buds</li> <li>Heart begins beating (around day 22)</li> </ul>
2	1	<ul style="list-style-type: none"> <li>Eyes form, but eyelids are fused shut</li> <li>Brain waves are detectable</li> <li>Limb buds form paddle-like hands and form ridges</li> </ul>
3	30	<ul style="list-style-type: none"> <li>Eyes are well developed, but eyelids are fused</li> <li>Limbs are well-formed, with nails on fingers and toes</li> <li>Fetus moves but too weakly for mother to feel it</li> </ul>
4	100	<ul style="list-style-type: none"> <li>Face looks more distinctly human</li> <li>Heartbeat can be heard with a stethoscope</li> <li>Scalp begins to grow hair</li> </ul>
5	200–450	<ul style="list-style-type: none"> <li>Body covered with fine hair (lanugo)</li> <li>Mother can feel fetal movements</li> <li>Fetus is now bent forward into "fetal position"</li> </ul>
6	500–800	<ul style="list-style-type: none"> <li>Eyes are open</li> <li>Skin is wrinkled, pink, and translucent</li> </ul>
7	1100–1350	<ul style="list-style-type: none"> <li>Fetus turns to an upside-down position</li> <li>Fetus can usually survive if born prematurely</li> </ul>
8	2000–2300	<ul style="list-style-type: none"> <li>Fetus has a "babyish" appearance, with less wrinkled skin</li> </ul>
9	3200–3500	<ul style="list-style-type: none"> <li>More fat deposits</li> <li>Nails extend to or beyond fingertips</li> <li>Birth is imminent</li> </ul>

Sexual reproduction varies based on a variety of factors. Three main factors are...

- Reproductive \_\_\_\_\_
- \_\_\_\_\_ of \_\_\_\_\_
- Ways that \_\_\_\_\_

Different organisms will develop offspring either \_\_\_\_\_ or \_\_\_\_\_ (in the form of eggs) depending on the species.