

# Why does it matter?

## **1** Understanding human development builds informed perspectives

Learning about embryology and fetal development gives a clear, science-based understanding of how human life grows week by week. Many public conversations about pregnancy happen without this foundational knowledge, and accurate information helps people engage the topic more thoughtfully and responsibly.

## **2** Fetal milestones reveal a continuous process of growth

From the earliest stages, development follows a structured and measurable sequence—organ formation, heartbeat development, brain activity, and increasing complexity over time. Recognizing these milestones helps people see development as a dynamic process rather than a single moment in time.

## **3** Education helps replace confusion with clarity

Pregnancy and prenatal development are often surrounded by misinformation or oversimplified claims. Clear, accessible science helps people evaluate information more carefully and form conclusions based on facts rather than assumptions.



“The best response to misinformation isn’t louder outrage — it’s clearer truth.”  
-Charlie Kirk

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Questions?

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# Embryology & Fetal Development

What’s really going on inside the mother’s body?



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# Prenatal Development Timeline

- Day 1 – Fertilization occurs, forming a unique human zygote with its own complete set of human DNA.
- Week 1 – The developing embryo travels through the fallopian tube and implants in the lining of the uterus.
- Weeks 2–4 – Early development begins as the foundation for major body systems forms, including the brain, spinal cord, nervous system, blood vessels, and early reproductive structures.
- Week 3 – The heart begins beating.
- Week 8 – All major organ systems have formed and will continue growing and maturing throughout pregnancy.
- Week 12 – The developing fetus begins swallowing and making early movements.
- Week 20 – Many mothers begin to feel fetal movement such as kicking, turning, or hiccups.
- Week 25 – The developing fetus can hear sounds from outside the womb.
- Week 28 – Continued growth and maturation occur throughout the third trimester.
- Week 32 – The body continues gaining fat and developing smoother skin.
- Week 38 – Birth occurs after a remarkable journey of growth and development from a single-cell zygote into a newborn with trillions of specialized cells.

Sources: Developmental milestones in this brochure are based on standard human embryology references, including *The Developing Human: Clinically Oriented Embryology* (Moore, Persaud & Torchia) and *Langman's Medical Embryology* (Sadler). Developmental ages are measured from fertilization (conception), not from the first day of the last menstrual period (LMP). To compare with LMP-based dating commonly used in obstetrics, add approximately two weeks.

## Fertilization: The Beginning of Prenatal Development

At fertilization, a sperm cell and egg cell unite to form a zygote, the first stage of human development. This single cell contains a unique combination of genetic information from both parents and begins a carefully coordinated process of growth and development.

The zygote contains the complete set of DNA needed to guide the formation of specialized cells, tissues, and organs throughout prenatal development.



- Heart – The heart begins beating by approximately Week 3.
- Brain – The brain begins forming during Weeks 2–4. Detectable brain activity is present by approximately Week 6.
- Muscles – Spontaneous and reflexive movements begin by approximately Week 4.
- Arms & Legs – Limb buds appear by approximately Week 4.
- Bones – Bone formation begins by approximately Week 6.
- Elbows – Elbows become distinguishable by approximately Week 6.
- Fingers – Separate fingers are visible by approximately Week 7½.
- Toes – Separate toes are visible by approximately Week 7½.
- Nose – The nose, part of the respiratory and olfactory systems, is present by approximately Week 8.
- Stomach – The stomach, part of the digestive system, is present by approximately Week 8.
- Thumb – Thumb-sucking movements may be observed by approximately Week 9.

## Major Developmental Milestones

- Fingerprints & Fingernails – Fingerprints and fingernails begin developing by approximately Week 10.
- Mouth – Baby begins swallowing by approximately Week 12.
- Taste Buds – Taste buds are present throughout the mouth by approximately Week 12.
- Face – Facial features become more defined by approximately Week 13.
- Movement – Many mothers begin to feel Baby's movements around Week 14, although many first notice them closer to Week 20.
- Voice – Movements of the larynx (voice box) can be detected by approximately Week 18.
- Hair – Hair is visible by approximately Week 23.
- Ears – Baby can hear sounds and may recognize familiar voices and music by approximately Week 27.
- Eyes – The eyes respond to light by approximately Week 27.
- Eyelids – Eyelids open and eyelashes are present by approximately Week 28.
- Skin – Baby's skin becomes smoother as body fat continues to develop by approximately Week 32.