

Transcript

11-105-Fetal Growth

A few introductory words of explanation about this transcript.

This transcript includes the words sent to the narrator for inclusion in the latest version of the associated video. Occasionally, the narrator changes a few words on the fly in order to improve the flow. It is written in a manner that suggests to the narrator where emphasis and pauses might go, so it is not intended to be grammatically correct.

The Scene numbers are left in this transcript although they are not necessarily observable by watching the video.

There will also be occasional passages in blue that are NOT in the video but that might be useful corollary information.

There may be occasional figures that suggest what might be on the screen at that time.

The beginning of the development of a human embryo begins in the ovary. Here is an unfertilized egg drifting down the Fallopian tube. It begins the fertilization process as it encounters sperm.

While many may hit the egg, only one manages to deliver its genetic payload. And when it does, the egg immediately stiffens its outer wall to prevent other entry.

Over a period of about 5 days, the egg divides and divides again until there are exactly 32 cells now squeezed inside that same stiffened outer wall.

Inside the blastocyst, we find the group of cells that will actually develop into a human being. The outer cells will give rise to the placenta and other supporting tissues.

At this stage, it implants itself into the wall of the uterus and a pregnancy is initiated.

Now we see the inner cell mass form into a disc, and at 14 days we see the primitive streak form, which establishes the line of bilateral symmetry.

Then the cells in the disc migrate as development continues. As the cells on one side of the disc grow faster than those on the other side, the whole disc rolls into nested tubes that will become the gut canal and other tissues.

At this point the embryo is about 28 days old and measure is about $\frac{1}{4}$ inch long. You can see all four limb buds and early inner ear development.

Four days later, eye pits are forming and the arm buds begin to taper.

Another day, and we see the beginning of nasal pits and hand plates. This embryo is now a little less than $\frac{1}{2}$ inch long.

At 37 days in, it is $\frac{3}{4}$ inch long. Nose and ears continue to develop and thigh, leg and foot can be distinguished.

41 days and we can see fingers, a jaw, and lumbar curvature.

Three more days, we have elbows and the beginning of eyelids.

At 47 days and our embryo has straightened its trunk. Its limbs extend forward, and toes are visible.

Another few days and the embryo has upper limbs slightly bent at the elbows, short stubby fingers, hands curving over towards each other but still far apart.

52 days old and an inch long, and we see hand pads, wrists, and distinct toes

Two more days and we see external ears and opposite hands can now touch,

At 8 weeks, the embryo is still only one and a quarter inches long, but the detail is amazing