

Welcome to this lesson on fertilization.

Today we are going to be discussing the process of fertilization, and how it can lead to the development of an embryo.

Fertilization is the process in which male sperm and female egg combine genetic information, generally as a result of sexual intercourse. In this process, semen is ejaculated from the penis into the vagina, and travels through the vagina, cervix, and uterus, and eventually into the ova duct. An ova duct is the area where an oocyte is then fertilized by a sperm cell.

I'm going to zoom into this diagram right here, and this is going to illustrate a little bit more about what is happening during fertilization. OK. Basically, what happens during fertilization, once the sperm reaches the egg, is that the acrosome, which is that enzyme cap on the head of the sperm, will allow the sperm to penetrate the zona pellucida. The zona pellucida is this thick layer that surrounds the egg.

So the acrosome cap contains these enzymes which allow the sperm to penetrate this zona pellucida.

Once inside, fertilization has happened. So the egg matures once fertilization happens, and is then called an ovum. So the oocyte, once it's been fertilized, matures and is called an ovum.

Once a sperm has entered the egg, the nuclei of the sperm will fuse with the nuclei of the egg. Now the nuclei of the sperm-- we're going to label that right here-- so this is the sperm, has a total of 23 chromosomes. So it is haploid, meaning that it has half the number of chromosomes as a regular body cell. And this is going to be the nuclei of our egg cell. It also has 23 chromosomes. So that what happens when the sperm and the egg cell combine, when they fuse nuclei, the 23 chromosomes from the sperm combine with the 23 from the egg to give a total of 46 chromosomes, which is the proper number in a human body cell.

So from there, once the sperm and egg nuclei have combined, we now have a cell that has a total of 46 chromosomes, forming a zygote, which is the first cell of an individual. And then the ovum, at that point, will then start to divide by mitosis in order to begin to form an embryo.

This lesson has been an overview on the process of fertilization.