

Welcome to the module from the Course Developmental biology ZOC108 for the program Bachelors of Science, Third year for the paper zoology.

Myself Dr. K. K. Therisa and the name of the module is Development Structure and Functions of amnion and chorion from the unit- Late embryonic development.

The outline of the module is development and structure of amnion and chorion, followed by functions of amnion and chorion.

The learning outcome expected is the students will be able to illustrate and describe the development and structure of amnion and chorion. And also, to understand the functions of amnion and chorion.

In the previous module we have spoken in general about the importance of extraembryonic membrane in chick and also in amniotes at the same time we had a discussion about the development and the structure functions of yolk sac.

In this module we are going to concentrate more on the amnion and the chorion which are another important extra embryonic membrane in chick. As far as the amnion development is concerned, it starts at about 30 hours of incubation. Immune is composed of the somatic player.

Somatopleure is the somatic mesoderm with the ectoderm together and when fully formed surrounds the embryo completely. Now from the head region of the embryo, the somatopleure is raised up so that it forms a head fold of amnion. The head fold grows over the embryo and extends posteriorly. Similarly, the amniotic tail fold appears in the posterior region of the embryo, after the second day of incubation. And this tail fold grows forward over the hind end of the embryo, and by the third day of incubation, the lateral folds of amnion also developed, and this to grow over the embryo. And thus, all these three processes culminate in their fusion, a body embryo forming a structure called amnion. And this is how amnion is developed in the chick embryo.

After the fusion, the cavity is enclosed by the amnion and this cavity is called as amniotic cavity which is filled with the fluid. The amniotic cavity is lined internally by the ectoderm and externally by the mesoderm. That's the reason why they are considered as to be formed from the somatopleure. The amniotic fluid gets accumulated in the amniotic cavity, and the amnion, with its amniotic fluid. Thus, replace the natural pond by enveloping the embryo. In case of reptiles, birds, and mammals, and that's the reason why they are being termed as amniotes.

So, this is a structure of the developing chick embryo. And this are the amniotic Head fold, which moves posteriorly and the amniotic tail fold which moves towards each other in such a way that this fold fuses along with the lateral fold and then it forms a complete sac, within which the embryo is set.

So, the development structure of Chorion is also been happening at the same time, so after the fusion of the head, tail and lateral fold, the outer layer of this fold becomes continuous to become the outermost

membrane, and this membrane is called as Chorion. Another term for Chorion serosa the outer sheet of the amniotic fold represents the Chorion. Chorion is composed of somatopleure, with ectoderm and inner somatic mesoderm, so between the amnion and the chorion there is a coelom. There is a space which is called as the extraembryonic coelom, or it is also called as sero amniotic cavity or chorio amniotic cavity.

By the end of second week of incubation, the Chorion grows completely around the yolk sac and envelopes it completely, and it is considered as the outer layer or outermost extraembryonic membrane and the closely opposed to the shell membrane. The Chorion is closely opposed to the shell membrane, but at the same time on the other side, it is intimately associated with the Allantois, which we will be talking about in the next module.

So here is the picture of the extraembryonic membrane in chick during late developmental stages, which shows the complete developed amnion, just like a pouch within which the embryo is being placed. With filled with the fluid. That protects the embryo from all the type of shock. External shock.

At the same time, the chorion forming the outermost layer. With a cavity between the amnion and the chorion called chorionic cavity or extraembryonic cavity, or sero amniotic cavity.

Moving on to the functions of amnion. Amnion is known to protect the embryo from desiccation. This is one of the important points that was required because, as these eggs are being laid on the dry land and the embryo grows within this close shell, and only dry land There are always chances of getting desiccated because the embryo is surrounded by this fluid filled amniotic fluid cavity and the amnion.

The embryo is protected from this desiccation. At the same time, the protection from mechanical shocks. The embryo within this amnion surrounded by the fluid takes care of the embryo from all those types of mechanical shock which are always there on the dry land. Prevention of the adhesion of embryo to the membranes. As there are certain type of muscles that develops from the membrane. The mesodermal region which helps the embryo to ever prevent the adhesion to the membrane and they prevent stagnation of blood due to the rocking movement.

Finally, the functions of chorion are to protect as well as respiration. Protect, because it is the outermost layer and respiration again because it is outermost layer, it is in closer to the porous shell through which the transport of gases takes place.

These are the references which was used to prepare this module.

Thank you.