

Whole Mount Preparation and Staging of Chick Embryo: Identification at 24, 48, and 72 Hours of Development

Prepared By-
Dr. Tanmay Sanyal
Assistant Professor
Department of Zoology
Krishnagar Govt. College
Krishnagar, Nadia, West Bengal, India

WHOLE MOUNT PREPARATION OF 24 & 48 HOURS CHICK EMBRYO

A.) Incubation of eggs:- Fertilized egg, collected from nearest poultry farm & incubated in humidified incubators at 37.5°C - 38°C . These are oriented with their blunt end up.

B.) Preparation of whole mount:-

1. Eggs that has incubated for 1-3 days are collected from egg incubators & placed on an egg dissection holders.
2. Blunt end of the egg was placed facing upward.
3. The blunt end of the egg was tapped with a forcep to crack the shell into numbers of pieces. The broken bits of the shell were removed with forceps.
4. The outer cell membrane was removed & very carefully white inner shell membrane overlying the embryo was also removed.
5. With the help of the scissors a cut was made around the embryo to make it free.
6. Now with the help of a forcep & a spoon the embryo with the membrane was collected in a petridish/watch glass containing Ringer's solution.
7. Embryo was fixed in cannoy's fixative/alcohol.
8. After washing the embryo in 70% alcohol, it is then transferred to the Eosine.
9. The embryo is then dehydrated through 90% and absolute alcohol (left for 10 minutes in each change).
10. cleaned in xylol, and mounted in dpx.

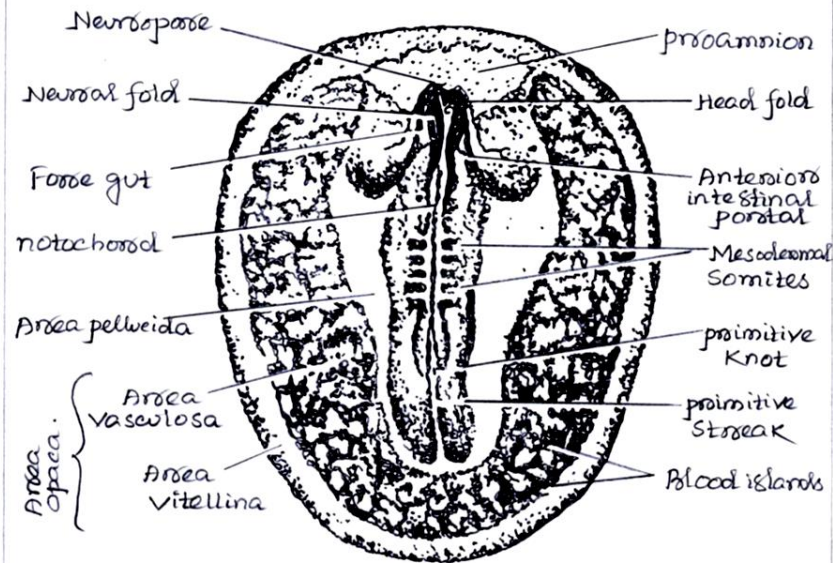


Fig:- Whole mount of 24 hours chick embryo.

Aloke Saha

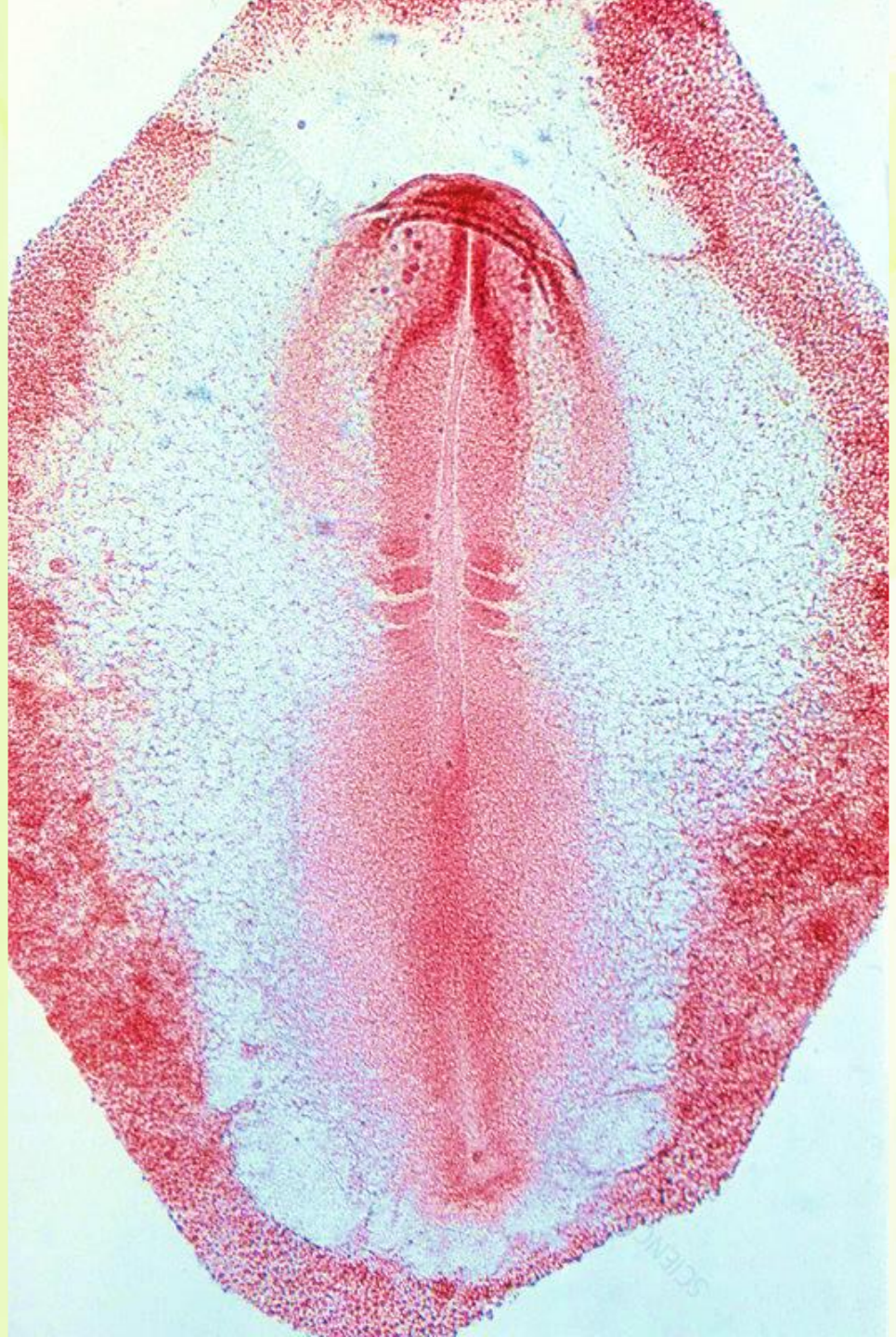
Identification:-

1. Primitive Streak	Primitive streak in a reduced state.
2. Notochord	Notochord and neurospore are observed.
3. Neural fold	Neural folds well developed towards the anterior end.
4. Eye -	Primary optic vesicles in an early stage of development. The beginning of eye formation is observed.
5. Foregut -	Foregut differentiation discernible.
6. Heart	Paired heart rudiments with dorsal and ventral aorta present.
7. Somites	Somites four pairs in the middle of the body.
8. Others -	An inner area pellucida, an outer area opaca containing blood islands are seen. Area opaca and area vasculosa are distinct.

OXFORD

Hence, it is the 24 hours chick embryo.

Teacher's Signature Aloke Saha



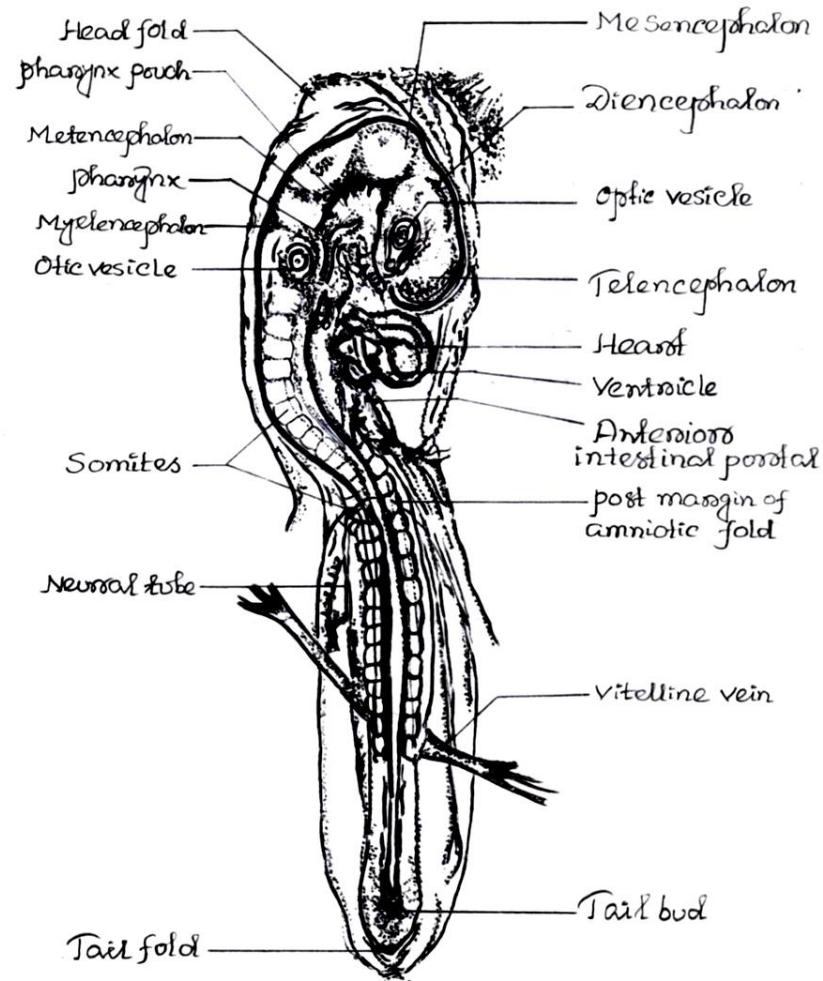


Fig. Whole mount of 48 hours chick embryo.

Aloke Saha

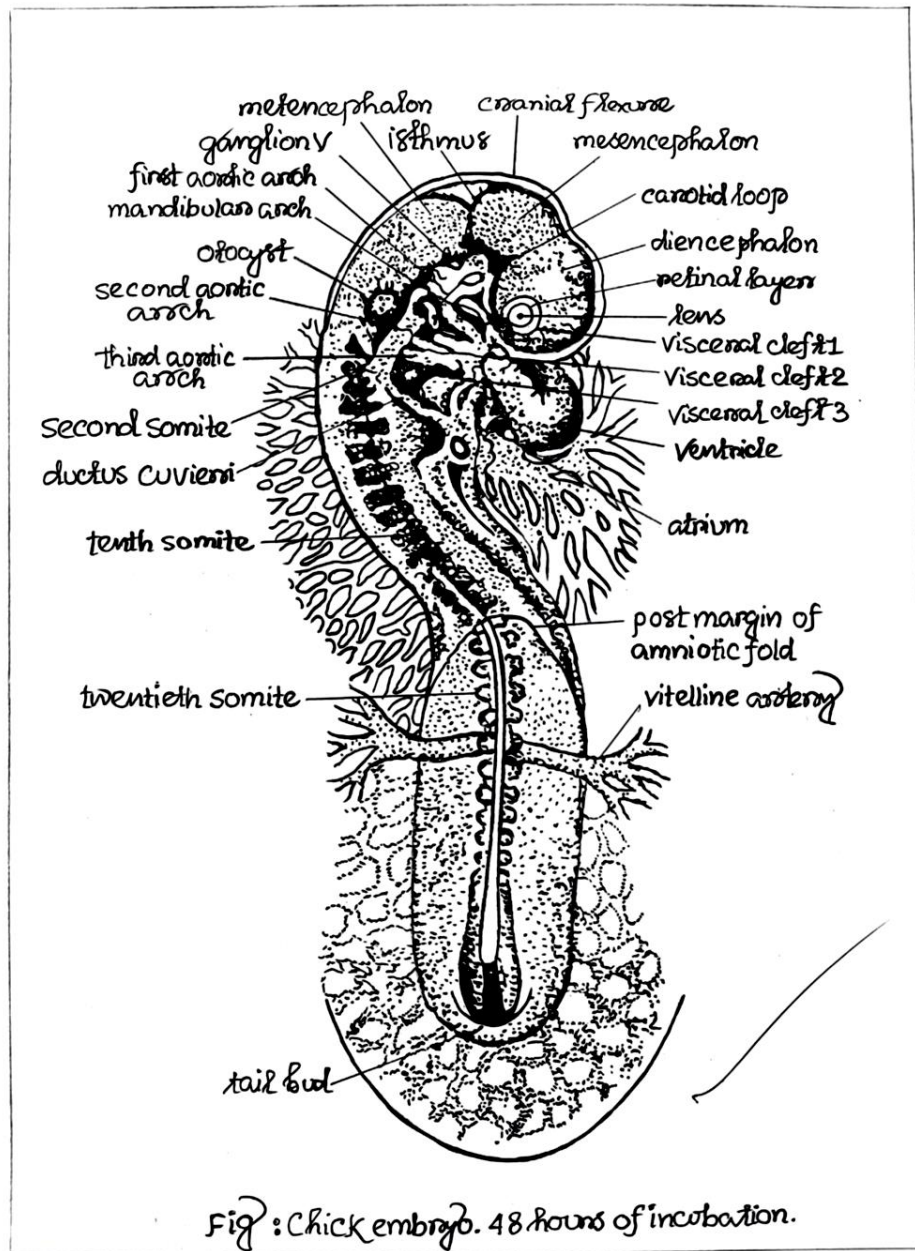
Identification:

1. Twisting?	Anterior end of the embryo is twisted to the right.
2. Eye	Eye is in the form of optic cup with a lens. The lens is still not spherical and separated from the epidermis and is in the form of a sac with an opening to the exterior.
3. Ear	Ear rudiments are in the form of pockets. Auditory vesicles distinct.
4. Somites	Present in large no. But some unsegmented mesoderm is present at the posterior end. 26 pairs of somites are generally present.
5. Neural tube	This is not closed at the posterior end. Differentiated into brain and spinal cord.
6. Primitive streak	Remnant is found and greatly reduced.
7. Heart	Large and conspicuous.
8. Arterial arches	Three pairs of arterial arches arise from the ventral aorta.
9. Other features	Both cranial and cervical flexure developed. Amnion in a very early stage. Optic cups prominent.

- Hence, it is the 48 hours chick embryo.

OXFORD

Teacher's Signature: Aloke Saha



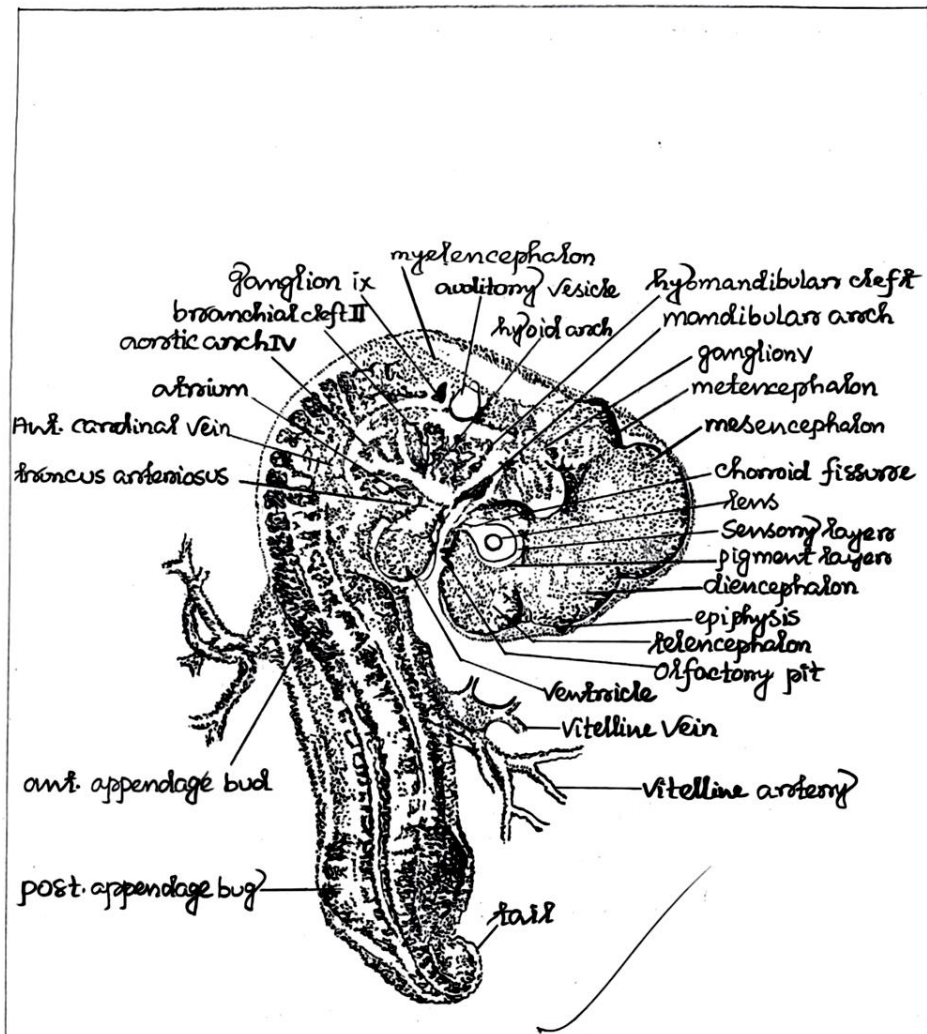


Fig:- Chick embryo. 72 hours of incubation.

WHOLE MOUNT OF CHICK EMBRYO: AGE 72 HOURS.

The most conspicuous features are-

- ① Twisting:- Anterior part of embryo is greatly curved and most of the body lies on its left side.
- ② Neural tube:- Formation is completed.
- ③ Somites:- 36 pairs of somites are present.
- ④ Eye:- Eyes develop completely. Optic cups with distinct, closed retina and lenses.
- ⑤ Ear:- The auditory vesicles become pear-shaped and pharyngeal cleft is ready to become middle ear. Auditory vesicles connected to the ectodermal aperture through ductus endolymphaticus.
- ⑥ Nose:- Nose rudiments in form of pockets.
- ⑦ Brain:- The cranial flexure is maximum. Head fold grows back and lies between 10 to 18 somites. The paired cerebral hemisphere begin to bulge from the roof of the telencephalon; other parts of brain become well developed.
- ⑧ Pineal gland:- Rudiments present.
- ⑨ Wing buds:- The wing buds appear immediately posterior to the heart.
- ⑩ Hind limb buds:- The hind limb buds also makes their appearance.
- ⑪ Hindgut:- The amnion completely covers the embryo and a small allantois has grown out from the hindgut.



Acknowledgement

I would like to express my profound appreciation to Alope Saha, DBT Junior Research Fellow and Research Scholar, for his diligent efforts in preparing this presentation. His dedication and comprehensive understanding of the subject have been instrumental in the completion of this work.

THANK YOU