

**Background Information**

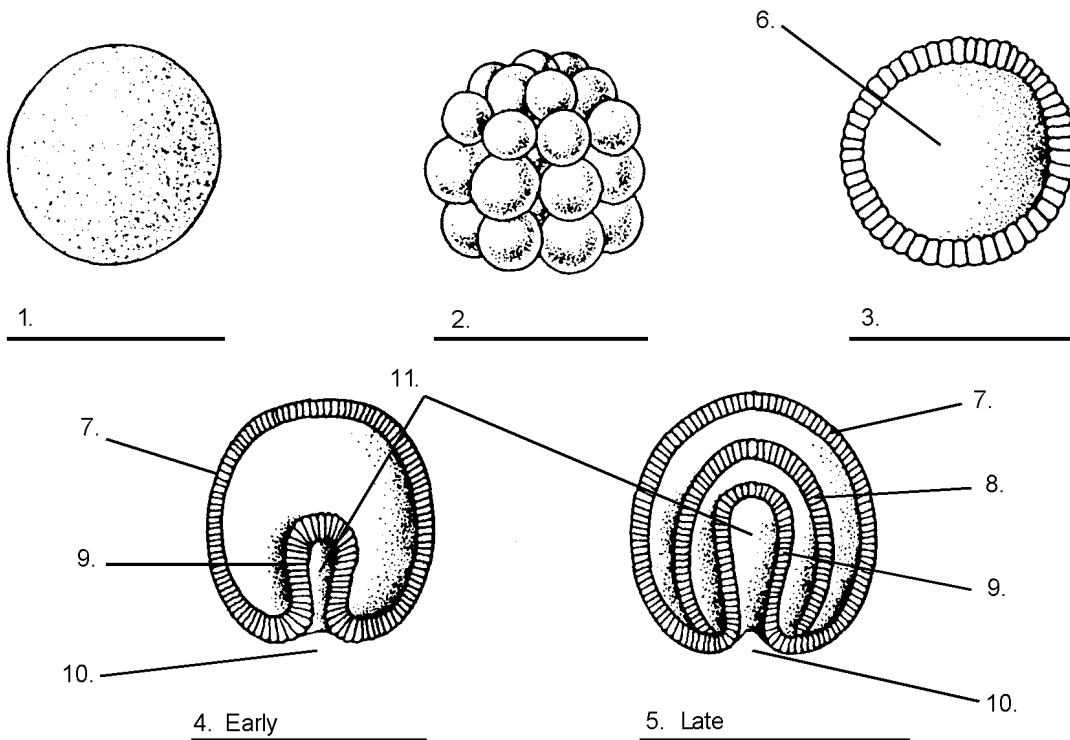
The development of the embryo begins after fertilization. It follows a well-defined pattern of growth and **differentiation**. Embryonic development is controlled, for the most part, by the genes - the hereditary material contributed by both parents. Development may occur either in the external environment or within the body of a parent.

**Stages of Embryonic Development**

After fertilization, the **zygote** divides by mitosis into two cells. Mitotic division, which is called **cleavage** in embryos, continues, eventually forming a solid ball of cells. This is the **morula** stage. As cleavage continues, the center of the ball becomes hollow. This is the **blastula** stage. With still further cleavage, an inward growth of cells at a particular point results in the formation of a pocket, which pushes into the hollow center of the ball. This is the **gastrula** stage.

Within the double-walled gastrula three distinct layers of embryonic tissue - the **germ layers** - develop. The inner layer is the **endoderm**. The outer wall of the gastrula forms the **ectoderm**. And between the ectoderm and endoderm a middle layer called the **mesoderm** forms.

1. Label each stage and structure of embryonic development shown in the following diagrams.



2. The three embryonic germ layers are the \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
3. Early cell division in embryonic development is commonly called \_\_\_\_\_ and can be either \_\_\_\_\_ cleavage or \_\_\_\_\_ cleavage depending on the animal.
4. What does the blastopore become in most animals? \_\_\_\_\_. What does it become in humans, other chordates, and echinoderms? \_\_\_\_\_.
5. The embryonic germ layers give rise to all parts of the animal's body. List a few of the systems that come from the following embryonic germ layers:
- a) ectoderm -
  - b) mesoderm -
  - c) endoderm -
6. Define differentiation.
7. Use the following terms to complete the sentence below: specialization, multicellularity, and differentiation.
- \_\_\_\_\_ demands that the cells undergo \_\_\_\_\_ which will lead towards division of labor, or cell \_\_\_\_\_.