

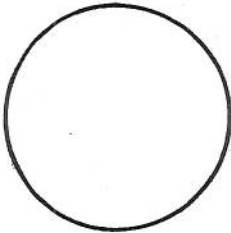
Sea Urchin Development Microscope Lab

Once an egg is fertilized, development begins. Development is the series of changes an organism undergoes to reach its final form. These changes include the development of the single-celled zygote into a multicellular embryo. What are the intermediate stages of development? In this lab you will observe and diagram the early stages of sea urchin development and relate these stages to the early developmental stages of humans.

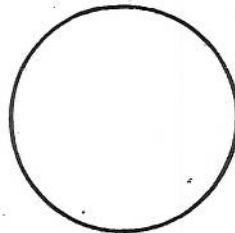
Part A: Sea Urchin Development

1. Observe the prepared slide of sea urchin embryo development under low power. NOTE: the slide shows all the embryo stages in a random order.
2. Locate and diagram each of the following stages in the space provided.
 - a. unfertilized egg—single cell with no clear covering, distinct nucleolus inside nucleus
 - b. fertilized egg—single cells with thick clear covering; no visible nucleus
 - c. 2 cell stage—two distinct cells visible side-by-side, each cell smaller than fertilized egg
 - d. 4 cell stage—four distinct cells, appear stuck together
 - e. 16 cell stage—sixteen visible cells stuck together, counting may be difficult because some overlap others
 - f. morula—solid ball of small cells, same color throughout
 - g. blastula—solid ball of very small cells, center appears lighter in color than outer ring of cells

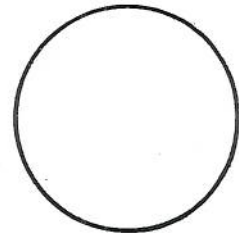
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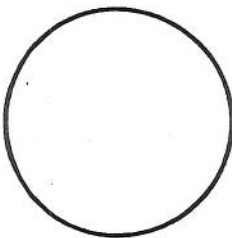
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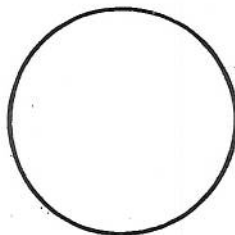
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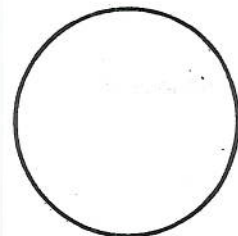
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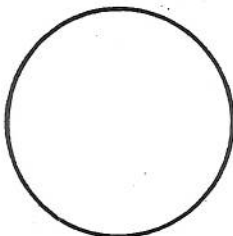
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f.



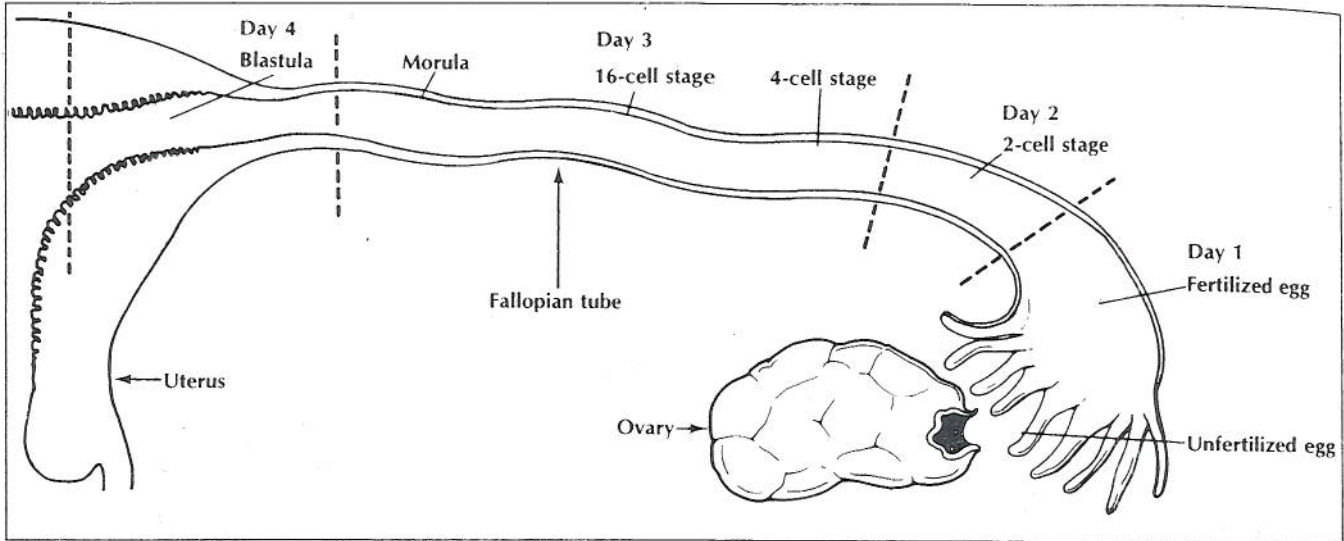
g.



Part B: Human Development

A human fertilized egg undergoes early development stages similar to a sea urchin. However, development of sea urchins takes place outside the body and in humans, development occurs internally in the reproductive organs of the female.

1. The diagram below shows half the human female reproductive system. Complete the diagram by drawing your diagrams from Part A, step 2, where indicated. The figure below is divided into days. Each day indicates the time that has elapsed since fertilization occurred on day 1.



2. Answer the following questions.

1. What stage occurs between the 4 cell stage and the 16 cell stage. _____
2. Describe the cell size with increasing numbers of cells. _____
3. Through what structure does the egg travel? _____
4. What is the time required for a fertilized egg to reach the uterus in humans? _____
5. Describe the changes in the fertilized egg that take place between the ovary and the uterus.

6. What happens to the blastula (blastocyst) after the fourth day of development? _____

