

How does the Chick Breathe Inside the Shell?

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ABSTRACT

Animals that grow inside their mothers, like humans, get their oxygen from their mothers. The blood stream of the baby animal and the mother are connected through an umbilical cord, which allows the baby to collect oxygen that his or her mother breathes in and use the mother's lungs to get rid of the carbon dioxide. But how do animals that grow in a shell. Have you ever wondered how a chick breathes inside its shell? Every animal needs oxygen to survive, so the chick must get air somehow! Try this to discover the Answer.

Keywords : Blood Stream, Oxygen, Metabolism, Carbon Dioxide, Air Cell, Pores

I. INTRODUCTION

Every animal requires **oxygen** to live. When animals, including humans, breathe in, oxygen enters the lungs, where it is shuttled into the blood stream and distributed to all the different parts of the body. The oxygen is used in an internal chemical reaction called **metabolism** to provide the animal with energy. The process of metabolism also produces a waste gas called **carbon dioxide**. In order to get rid of this waste gas, the blood stream carries the carbon dioxide back to the lungs where it is collected and finally breathed out.

Bird and reptile eggs have a hard **shell**. Directly under the shell are two membranes. When the eggs are laid by the mother, they are warmer than the air, and as they cool, the material inside the egg shrinks a little bit. This shrinking pulls the two membranes apart, leaving behind an **air cell**, also called an air sack, that is filled with oxygen. As the animal develops, it needs the oxygen replenished so it can continue to grow, and it needs the carbon dioxide it is making to be able

to escape from the air cell. Well, if you examine a chicken egg carefully with a magnifying glass, you will see that there are tiny little holes, called **pores**, in the shell. A chicken egg shell has more than 7,000 pores.

The role of the detergent is to help break through the membranes of the egg so that the dye can make a concentrated, visible mark on the inside of the eggshell, rather than a light smear all over it. If you look at the egg at the back, you can see that chicken eggs have a shell, followed by an and not make a clear mark on the eggshell. The detergent does not affect the eggshell.



II. METHODS AND MATERIAL

Materials required:

5 eggs, 2 bowls, water, food color, dishwashing detergent, notebook & spoon.

Procedure: Pour 1.5 cups of water into a large bowl or pot, add $\frac{1}{4}$ teaspoon (tsp) of liquid dishwashing detergent and $\frac{1}{4}$ tsp of blue food color to the water in the bowl. Mix well. Carefully set all five raw eggs in the pot. In your lab notebook, write what time it is. You will be soaking the eggs for 24 hours. After the eggs have soaked in the liquid for 24 hours, carefully lift one of them out using the tongs or large spoon. How does the egg look, Crack the raw egg into a cup, being careful not to damage or crush the shell much. Set the empty egg's shell on a plate or paper towel and carefully inspect the inside of the shell. If you have a camera, you can take pictures of the inside of the shells. Repeat steps 5-8 until you have cracked open and examined the inside shell of each egg. When you are done making observations, thoroughly clean any surface the raw eggs touched because they may carry Salmonella. Also, wash your hands thoroughly with soap.

NOTE:-Make sure to get all of the detergent out of the measuring teaspoon and mixed into the bowl.

III. RESULTS

By this experiment we observe that the chick which is present inside the shell breathes through the pores (green spots) present on the shell.



IV. DISCUSSION & CONCLUSION

When we are done making observations, thoroughly clean any surface the raw eggs touched because they may carry Salmonella. Also, wash your hands thoroughly with soap. The role of the detergent is to help break through the membranes of the egg so that the dye can make a concentrated, visible mark on the inside of the eggshell, rather than a light smear all over it. If you look at the egg at the back, you can see that chicken eggs have a shell, followed by an outer membrane, and then an inner membrane. If there is a large enough pore/hole in the shell, the dye will get in; but without detergent to break through the membranes, the dye may get trapped and spread out between the shell and outer membrane, or between the two membranes, and not make a clear mark on the eggshell. The detergent does not affect the eggshell.

V. REFERENCES

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