

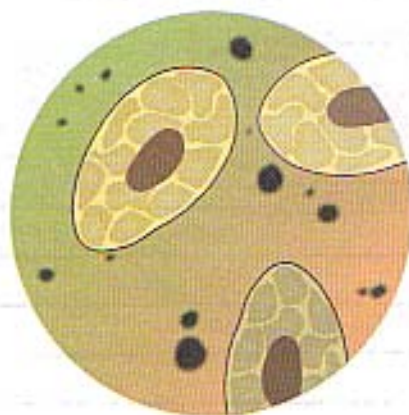
EXPERIMENT!

Overview. You will use an optical microscope to observe some skin cells from the palm of your hand!

Supplies needed: optical microscope
diluted iodine solution
slide
knife or scalpel
slide cover
small eyedropper
or toothpick

Directions. Follows these directions carefully. Place a check mark in the box as you complete each step in these directions.

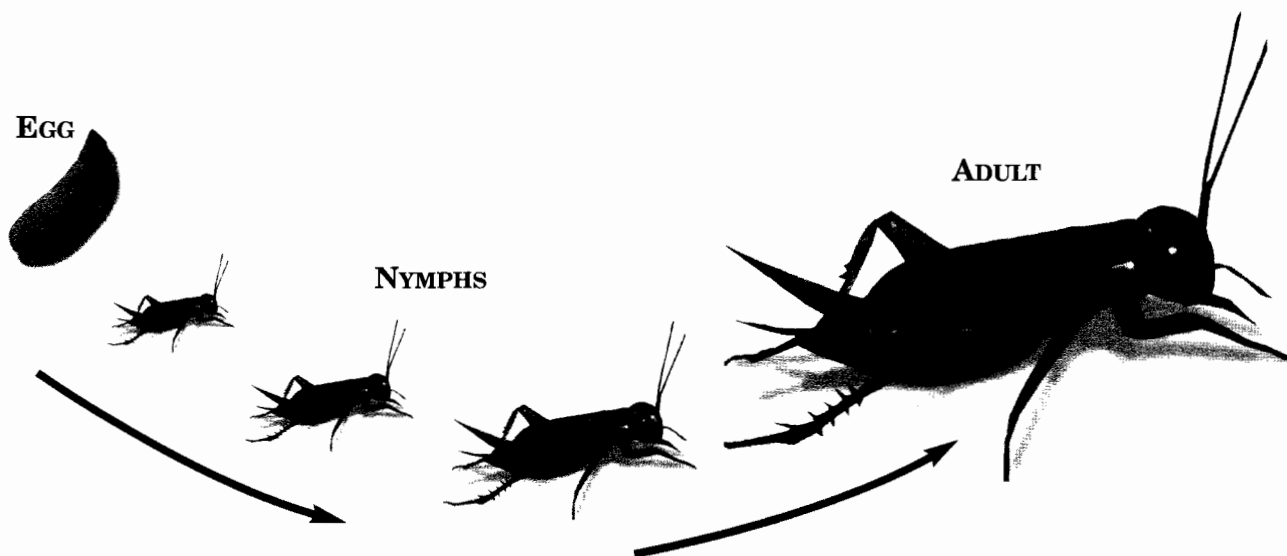
1. Have the teacher show you how to use the optical microscope. (If this has already happened, go to step 2.)
2. Ask your teacher to be present. When the teacher is with you, **CAREFULLY** use the edge of the knife or scalpel blade to scrape some skin cells from the palm of your hand. (NOTE: You will be able to get a lot of cells from just a little material, so you will not have to do a lot of scraping.)
3. Place the scraped skin cells on the slide.
4. Use the small eyedropper or a toothpick to place a small drop of diluted iodine solution on the skin cells while they are on the slide. (NOTE: This will stain parts of the cells and make them easier to view in the microscope.)
5. Cover the stained skin cells with a slide cover.
6. Place the prepared slide of skin cells under the microscope for viewing.
7. Adjust the microscope settings until you can see the skin cells clearly. (NOTE: If you have trouble adjusting the microscope to view the slide, have your teacher assist you.) The picture below should help you see what to look for. There may be some bubbles of air present along with the skin cells.



Crickets are examples of insects that use this form of growth. The newly hatched cricket looks nearly like its parent. However, it does not have wings. The young cricket also does not have reproductive organs at first. It is called a *nymph* at this growth stage. As the cricket nymph grows, it gets larger. Wings begin growing. Reproductive organs develop. Finally, at the end of the growth stage, its wings and reproductive organs are fully developed, and it enters adulthood.



GROWTH STAGE OF SILVERFISH



GROWTH STAGE OF CRICKET

The housefly is an example of a complex insect growth stage. The fly hatches into a worm-like creature called a larva. The fly larva is also called a **maggot**. The larva (or maggot) begins to eat soon after hatching. As the larva grows, its hard skin becomes too small. The larva sheds the skin and continues to grow. When the fly larva is developed fully, it changes into a pupa. The pupa moves very little. After several days, the pupa changes into an adult housefly.

The larva of each insect that goes through a complex growth stage can be identified. Color, size, and shape are ways that you can tell a difference between larvae. Some larvae are known as caterpillars. Grubs and maggots are other types of larvae.

When an insect reaches the adult stage, it is fully developed and ready to reproduce. Male and female adult insects mate. Eggs are fertilized and laid. The life cycle goes on.

SELF TEST 1

Answer true or false (each answer, 2 points).

- 1.01 _____ A paved parking lot is a good place to look for fossils.
- 1.02 _____ A cast fossil is one kind of carbonized fossil.
- 1.03 _____ Ancient insects preserved in amber are original-remains fossils.
- 1.04 _____ A print fossil does not contain any of the original remains.
- 1.05 _____ Dinosaur track fossils were found in Massachusetts.
- 1.06 _____ Minerals in water helped to form petrified fossils.
- 1.07 _____ Carbonized fossils are usually found in areas where coal has been formed.
- 1.08 _____ Fossils are only found in a few places around the world.
- 1.09 _____ Tar pits in Los Angeles contained many varieties of plant and animal fossils.
- 1.010 _____ Petrified tusks, bones, and teeth were found in Alaska.
- 1.011 _____ In *replacement*, the minerals in water totally replace the original hard part of the plant or animal.

Match these items (each answer, 2 points).

- | | | |
|-------|------------------------------|-----------------------------|
| 1.012 | _____ frozen mammoths | a. print fossils |
| 1.013 | _____ mold fossil | b. original-remains fossils |
| 1.014 | _____ bones in caves | c. petrified fossils |
| 1.015 | _____ found in coal | d. carbonized fossils |
| 1.016 | _____ permineralization | |
| 1.017 | _____ tree rings can be seen | |
| 1.018 | _____ most common fossils | |
| 1.019 | _____ cast fossil | |
| 1.020 | _____ preserved in amber | |
| 1.021 | _____ skin stayed on some | |

SCIENCE 510: LIFE PAC TEST

Match these items (each item, 3 points).

- | | | |
|-----|-------------------------|--------------------------------------|
| 1. | _____ unicellular | a. contain chlorophyll |
| 2. | _____ cytoplasm | b. cell division |
| 3. | _____ chloroplasts | c. when matter changes shape or form |
| 4. | _____ yeast | d. a form of chemical energy |
| 5. | _____ mitosis | e. organism has only one cell |
| 6. | _____ balance of nature | f. liquid within cell membrane |
| 7. | _____ original-remains | g. a type of fungi |
| 8. | _____ work | h. life needs are met |
| 9. | _____ metamorphic | i. a type of plant |
| 10. | _____ solubility | j. a type of fossil |
| | | k. a physical property of matter |
| | | l. a type of rock |

Write true or false (each answer, 2 points).

- _____ Green plants are primary consumers.
- _____ Bacteria are a form of animal-like protists.
- _____ Mollusks are a type of invertebrate.
- _____ Natural and human influences affect the balance of nature.
- _____ The Bible is one of the records of life.
- _____ Physical evidence suggests that long ago the climate was much the same all over the earth.
- _____ Growing plants can split rocks.
- _____ Noah took one pair of clean animals into the ark.
- _____ Kinetic energy is energy that is stored.
- _____ God wants human beings to be good stewards of energy sources.
- _____ Molecules sometimes stop their motion.
- _____ When water changes from liquid to steam, a chemical change occurs.