

ASEXUAL REPRODUCTION

The activities which every living thing must carry on in order to survive are called the life functions. Included are such things as movement, response to stimuli, obtaining food and oxygen, etc. But reproduction is also included, despite the fact that it is possible for an organism to continue living without reproducing. Why is reproduction classed as a life function?

Reproduction is the process by which an organism gives rise to others of the same kind. If the animals or plants of a particular kind (species) did not reproduce at a rate sufficient to replace those that died, the whole species would soon vanish from the earth. Thus, reproduction is essential to the continued life of the whole species, rather than to the life of any particular individual member of the species.

In nature, reproduction goes on in many different ways, but in general, there are two

basic types - sexual reproduction, and asexual reproduction. Some organisms can reproduce both sexually and asexually. In some cases, there is a pattern in which an asexual form of reproduction regularly alternates with a sexual form.

Sexual reproduction always involves a union of two cells to form a single cell. For example, the sperm of a male animal unites with the female egg to produce a one-celled fertilized egg which then develops into a baby animal.

Asexual reproduction occurs without the union of cells. As you examine the slides of this set, keep this question in mind. "What basic process occurs in every form of asexual reproduction?"

The magnification given, for example, Slide 1 - (100X) - means that the microscope was set at that power when the photograph was taken.

trates asexual reproduction because there was no union of cells.

But let us look at some details. Observe the darkly stained nucleus. Can you find evidence that it has just finished dividing? Usually the first sign that fission is going to take place in a one-celled organism, is the division of the nucleus.

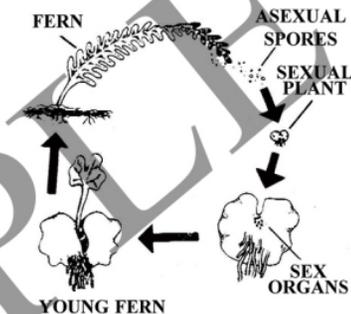
What must follow the division of the nucleus to complete the process of binary fission?

1. BINARY FISSION - PARAMECIUM Stained (100X)

This is a one-celled paramecium reproducing by fission. You can see at once that the whole organism is dividing into two equal parts. When division is completed, the two daughter cells will separate, and each will go its own way.

This illustrates reproduction because the number of paramecia has increased. It illus-

al generation, which produces a sexual generation again. This cycle is referred to as **ALTERNATION OF GENERATIONS**.



6. SPORULATION - FERN Stained (300X)

Ferns also produce spores. The slide you see is a cross-section of a fern leaf, showing a cluster of sporangia called a sorus. One sporangium at (S) shows several purple-stained spores.

When the spores are ripe, they are discharged. But a fern spore does not grow into a large fern plant like the one that produced it. Instead, it grows into a tiny, green, heart-shaped leaf which is the sexual phase in the life of the fern.

You can follow the rest of the cycle in the diagram. The sex organs in the heart-shaped leaf produce eggs and sperms. A fertilized egg grows into a new fern plant, which produces asexual spores once again.

Thus, a sexual generation produces an asexual

right, already has new eye spots, showing that a new head is developing.

Regrowth of missing parts is called regeneration. Here, regeneration also accomplished reproduction because in another week there will be two complete planarians instead of one.

independent plant.

This illustrates reproduction by **VEGETATIVE PROPAGATION**. It resembles regeneration in animals. In vegetative propagation, a non-reproductive part of a plant (stem, root) accomplishes reproduction by growing into a complete plant.

7. REGENERATION - PLANARIAN Living (5X)

A small flatworm, planarian, was cut into two pieces, both of which lived. Now we see them eight days later.

Notice that the head part, on the left, is growing a new tail. The original tail part, on the

8. VEGETATIVE PROPAGATION PICK-A-BACK PLANT - Living

One month before this picture was taken, the large leaf was cut from a plant, and placed in soil with the petiole (leaf stalk) carefully buried. During the month, the plant rooted and new leaves grew, forming a complete,

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Face the Micro-Slide-Viewer so that as much light as possible falls on the white Stage.

Insert the numbered end of the Slide Holder into the Slide Slot of your Viewer, moving it from your right to left.

View with your eye close to the Eye Piece.

With Slide No. 1 in place, focus by turning the Focus Knob.

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