

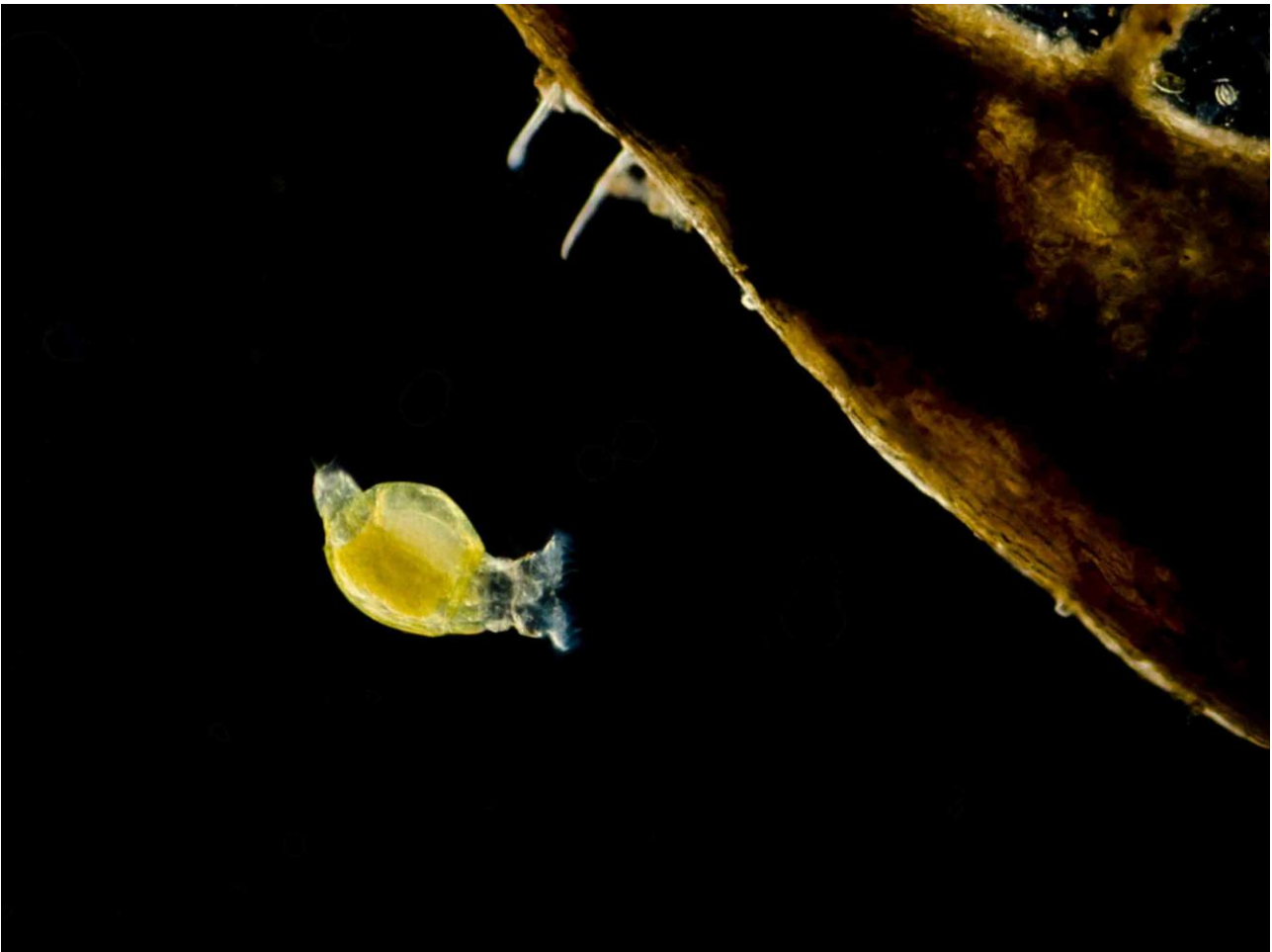
# BioMEDIA ASSOCIATES LLC

## HIDDEN BIODIVERSITY Series

### *Rotifers*

#### Study Guide

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Supplement to Video Program  
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Rotifers are microscopic animals, ranging in size from a few thousandths of a millimeter to about two millimeters. Despite their small size, they are multi-cellular organisms, formed by many cells. Around 2,000 different species of rotifers have been described. They are able to colonize almost all aquatic ecosystems, from ponds to the salt water through rivers, lakes and lagoons. Usually they are solitary and independent animals, but some species form colonies of large numbers of individuals.

The various species of rotifers have many forms, usually in relation to the lifestyle they lead.



Thus, it is possible to find rotifers with very elongated bodies and rotifers with rounded or plump bodies.



In some species, their bodies are covered by a protective shell which may have spines as defense against predators.



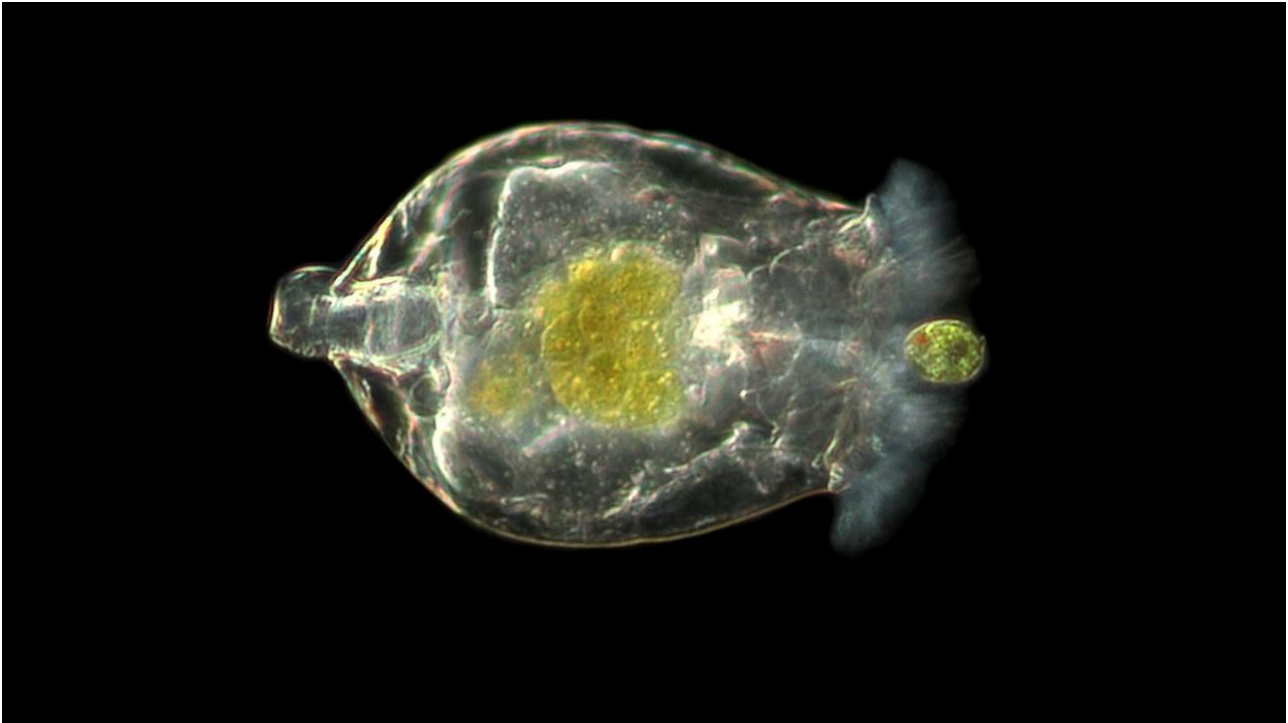
There are even sessile species living inside small protective tubes built for themselves with materials collected from the environment.

Despite the diversity of forms all species share a common feature: the possession of two crowns of cilia around the mouth. The presence of the crowns has earned them the common name of rotifers. Because of the synchronous movement of the cilia they appear to rotate.

### Some questions:

Why do you think there is such a variety of morphologies among the rotifers? Have they developed any strategy to defend against predators? Which is the main defining feature for a rotifer?

Most rotifer species use their crowns to capture food. With them they create water currents that draw food toward the mouth where their hardened jaws called mastax grind it before it passes into the intestine. Bacteria are the main food of rotifers, so we can say they are always plenty of food. However, there are species that are able to capture bigger prey such as ciliates, single celled algae or even other rotifers.



The size of the prey mainly depends on the rotifer size itself, but the diameter of their mouth is also important.

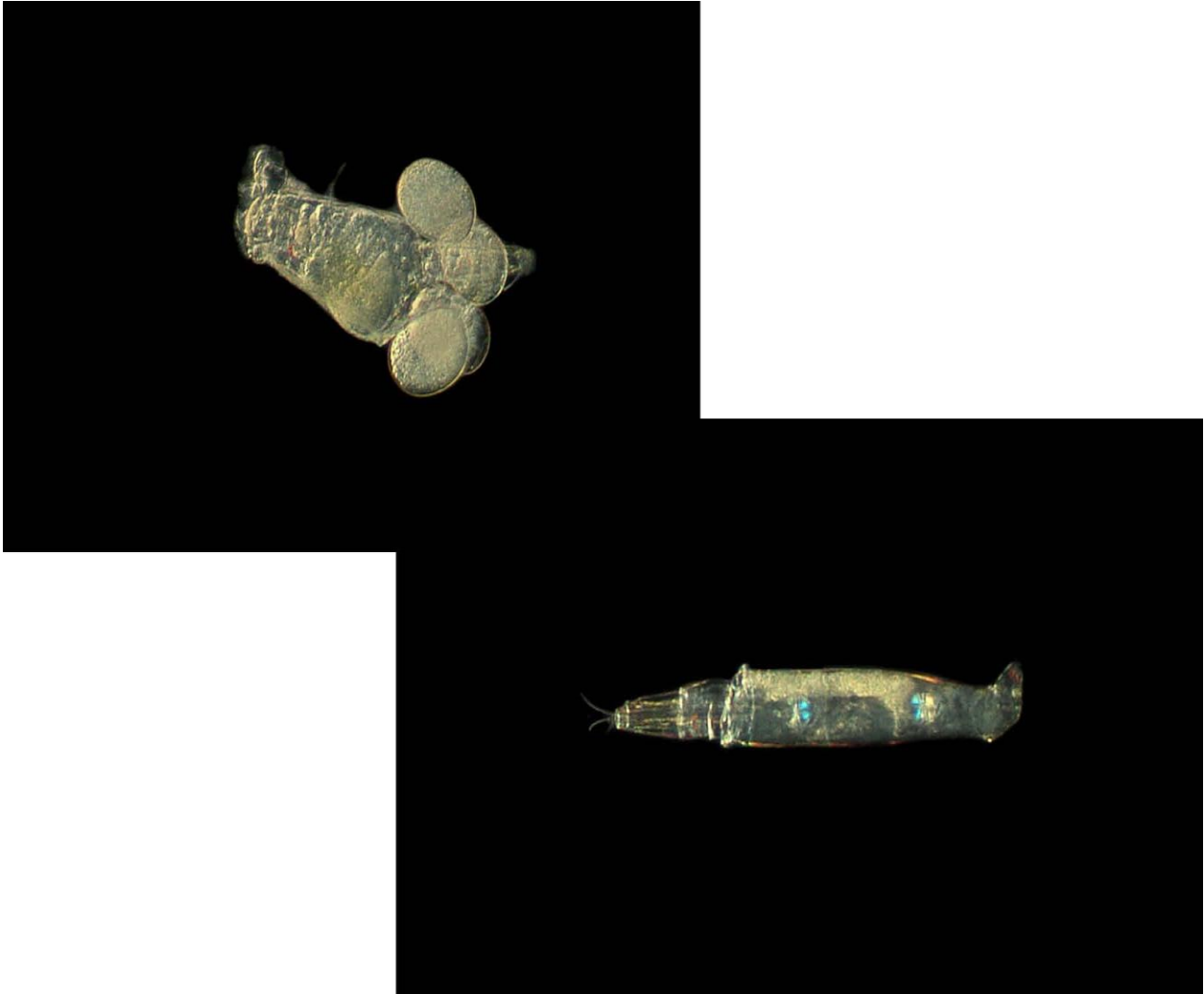
**Some questions:**

Do you think that sessile rotifers capture their food in the same way than non sessile ones? Which group of rotifers do you think is more abundant in species, that capturing big preys or that capturing bacteria? Why? How do rotifers capture their food?

Reproduction in rotifers exhibits some special characteristics. We know males are required in only 10 % of the species; the other 90 % are formed only by females. They are parthenogenetic females, able to reproduce without males.

Not all the species reproduce in the same way.

Some of them lay eggs while in other species the embryo remains inside the mother's body until it finishes its development.



It does not matter what their reproductive strategy is, the new born rotifers are able to live independently from the very instant they are born.

**Some questions:**

What is parthenogenesis? Which species do you think will produce bigger offspring, that reproducing by eggs or that developing embryo inside the mother's body? Why?

Many species of rotifers feed mainly on bacteria so we can consider them as important purifiers of the water. They remove a large numbers of bacteria that could cause serious problems to the aquatic ecosystems due their high reproductive rates. But the role of rotifers is not restricted to cleaning the water. Their small size makes them excellent prey for many aquatic animals like shrimp larvae, microscopic worms and even fishes at their early stages of development. Indeed, some species of rotifers are used by fish farms as food for their newly hatched fry.



**Some questions:**

Why can we say that rotifers are among the most important purifiers of water in aquatic ecosystems? What do you think could happen if rotifers did not remove bacteria from the water?



Rotifer (*Brachionus* sp.)



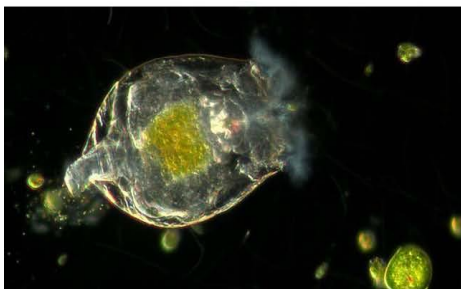
Rotifer (*Lecane* sp.)



Rotifer (*Rotaria* sp.)



Rotifer (*Philodina* sp.)



Rotifer (*Brachionus* sp.)



Rotifer (*Lepadella* sp.)



Rotifer (*Philodina* sp.)



Rotifer (*Brachionus* sp.)



Rotifer (*Rotaria neptunia*)

