

Tardigrades (Water Bears)

A CAROLINA™ CareSheet

Immediate Care and Handling

After the tardigrade culture arrives, open the shipping container, remove the jar, and inspect the culture. Once you verify that the shipment is intact, loosen the lid on the jar. Aerate the culture to replace oxygen depleted during shipment. Place the tip of the pipet (included) into the culture water, squeeze the bulb, and bubble air into the water. Withdraw the pipet and release pressure on the bulb, allowing it to refill with air. Repeat about 4 times.

Sampling and Observing

Although tardigrades are multicellular animals, they compare in size to unicellular protozoans and are only observable with a microscope. Allow 15 to 20 minutes after aeration for the tardigrades to settle, and then inspect the culture using a stereomicroscope. You will find the tardigrades moving about in the debris on the bottom of the jar.

To take a sample, squeeze the pipet bulb before inserting the pipet into the culture. Release the pressure on the bulb when the pipet's tip is close to a concentration of tardigrades. As the sample is pulled into the pipet, keep the pipet vertical to avoid stirring the culture and scattering the tardigrades. Do not squirt the pipet water back into the culture.

Place 1 or 2 drops of culture on a slide. After adding a coverslip, examine the slide using the microscope's lowest magnification. In most cases, there will be 1 or more tardigrades on the slide.

Culturing and Maintaining

Most of the material on the bottom of the culture jar is algae or debris left from the tardigrades' feeding. Maintain the culture jar under fluorescent light to keep the algae alive, and the tardigrades will continue to feed. In this way, your culture may remain viable for days or even weeks. For long-term culturing, you will need springwater, culture dishes, and a culture of freshwater green algae. Examples of algae include *Chlamydomonas* or *Chrorella*, although others give equally good results. The algae culture should be noticeably green before use. Pour 150 mL of the algae culture into a culture dish and inoculate with about 50 tardigrades or as many as you are able to capture. Maintain the culture under fluorescent lighting of an

intensity recommended for the algae. Check the culture under a stereoscope every 2 to 3 days to confirm that the tardigrades are flourishing. Such a culture may last several weeks before subculturing is necessary.

FAQ's

How long can I keep my cultures before using them?

If possible, use them within 2 to 3 days of receipt. The longer you delay, the more likely the cultures will spoil, be overturned, etc.

Will the cultures last longer if I place the jars in a refrigerator?

We do not recommend refrigeration or rapid temperature changes. Both may kill the organisms.

Are tardigrades dangerous?

No, tardigrades are not parasitic or pathogenic. Even so, know and follow your district's guidelines so you are prepared if a student ingests a culture.

My cultures arrived today (Friday), and I need them for class Monday. Will they be OK?

Remove the cultures from their shipping container, and care for them as directed in the "Immediate care and handling" section, and they should be fine. You may even discover that the cultures improve a bit because they have time to recover from shipping.

My students are not finding any tardigrades. What can I do?

Perhaps the culture was agitated, scattering the tardigrades. If finding tardigrades is a problem, make sure students are following the sampling procedure as described in the "Sampling and observing" section. If necessary, have students re-examine the culture under a stereomicroscope so they can observe as they draw an animal into the pipet.

Problems? We hope not, but if so contact us. We want you to have a good experience.

Orders and replacements: 1-800-334-5551, then select Customer Service.

Technical Support and Questions: caresheets@carolina.com

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