

Jul 08, 2024 Version 1

Shipping live Daphnia V.1

This protocol is a draft, published without a DOI.

Molly Fredericks¹, Jeff Dudycha², Carla Caceres¹, Matt Bruner²

¹University of Illinois Urbana-Champaign; ²University of South Carolina



Jeffry L. Dudycha

University of South Carolina

OPEN  ACCESS



Protocol Citation: Molly Fredericks, Jeff Dudycha, Carla Caceres, Matt Bruner 2024. Shipping live Daphnia. **protocols.io**
<https://protocols.io/view/shipping-live-daphnia-dgtm3wk6>

License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this protocol and it works.

Created: July 08, 2024

Last Modified: July 08, 2024

Protocol Integer ID: 102989

Funders Acknowledgement:

**Gordon and Betty Moore
Foundation**

Grant ID: 10636



Abstract

Background:

Daphnia are small zooplankton often used in laboratories as model organisms due their well-studied ecology and evolutionary history, small body size, short generation time, parthenogenetic reproduction, and simplicity of culturing under laboratory conditions. Occasionally laboratories may need to send different species or genotypes to collaborators for various reasons.

Purpose:

The purpose of this protocol is to set forth a recommended way in which to ship *Daphnia* specimens from one laboratory to another in a way that minimizes loss.

Guidelines

We have established that this protocol works for multiple species, including *D. pulex*, *D. pulicaria*, *D. dentifera*, *D. magna*, *D. ambigua*, *D. obtusa*, and *D. lumholtzi*. It should work more broadly.

Materials

50 ml conical/Falcon centrifuge tubes

Labels/Sharpie

Daphnia medium (filtered lakewater, ADaM)

Food for *Daphnia*

parafilm

whirlpak or ziploc bags

insulated box

blue icepacks

packing material

packing tape

Safety warnings

1. The main objectives are to control temperature (for most species, the problem is the package may get too hot), and oxygen. Oxygen can be depleted by decaying algae, so limit the the quantity of food you add to each tube. Well-fed *Daphnia* can be shipped without food, but may initially produce male offspring after being received.
2. In the U.S., most overnight shipping goes through the Memphis, TN airport because it is the least likely to experience weather disruptions. However, if you've only got one chance to send the *Daphnia*, check the weather report for Memphis and make sure it is clear.

Ethics statement

N/A



- 1 Label 50mL conical/falcon tubes with the species, genotype, and date in which the *Daphnia* were placed into the tubes.
- 2 Fill up the 50mL conical/falcon tubes with 45ml of filtered lake water or Artificial *Daphnia* Media (ADaM). Other *Daphnia* media, such as COMBO, may work.
- 3 Place up to 6 individuals per tube.
- 4 Feed individuals about 0.5mL of dilute *Ankistrodesmus falcatus* green algae or similar, then seal with cap.
- 5 Use parafilm to further secure the cap and tube by placing parafilm around the cap several times.
- 6 Place the tubes into a Ziploc bag or Whirlpak for secondary containment.
- 7 Use a box that is size appropriate for however many samples are being sent. Within the box make sure there is an insulated cooler box to help regulate temperature.
- 8 Place 1-3 frozen icepacks into the bottom of the cooler box and place the bags containing the tubes of *Daphnia* on top of the icepacks.
- 9 Double check to make sure nothing is leaking, if there is a leak grab a new tube and repeat the above steps.
- 10 10. Add packaging material such as bubble wrap to secure the tubes and prevent as much movement as possible during shipping.
- 11 11. Close and secure the package with packing tape and either procure stickers that say live animal or write on the box live animal, can also include on the box the species. In some cases, it may be sufficient to describe the contents simply as "water samples."
- 12 12. Print appropriate shipping label with sender and recipient information.
- 13 13. It is highly recommended to send these samples overnight for next day delivery.



14. 14. Use a parcel service such as UPS or FedEx to ship to the appropriate destination. UPS is recommended as their live animal policy includes all crustaceans. FedEx claims that they will accept live crustaceans however depending on the location of shipment processing they may not accept the package.