BioEd℠

Inserting Seeds into Media-Prepared Flasks

BCM Baylor College of Medicine

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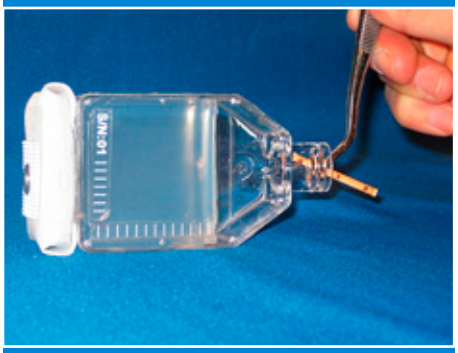
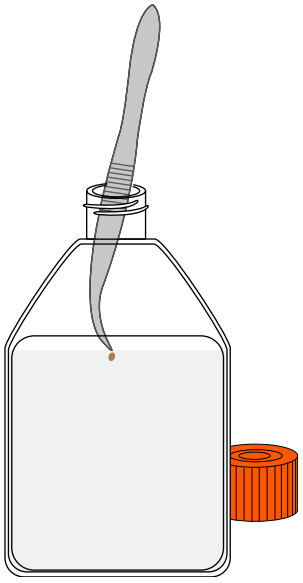


Demonstration of how an astronaut on the Space Station would insert a balsa wood strip with attached seeds into a prepared flask. Photo courtesy of BioServe Space Technologies.



Gently push the seed into the medium (about 1–2 mm). Illustration by G.L. Vogt © Baylor College of Medicine.

Note: **See "Preparing Flasks with Plant Growth Media," page 7, and "Controlled-Lighting Seed Growth Chambers," page 9, prior to conducting this activity.**

A *Brassica rapa* seed has a small indentation on it, from which the radicle, (embryonic root), will emerge. Seed orientation in experiments conducted in microgravity are very important because gravity, and thus, gravitropism, is not at work. In an experiment on the ISS, (photo to the left), three seeds were glued to a small strip of balsa wood. The strip was inserted into the flask, and pushed slightly into the growth medium so the seeds could begin to germinate. Four strips of seeds were used, with three seeds per strip. The seeds on strip "A" were oriented with the root area in the "down," position, seeds on strip "B" oriented "sideways," and seeds on strip "C" oriented "up." The same orientation structure would apply if using flasks filled with different density layers of media (strip "D" seeds were in the "down" position).

On Earth, plant seeds do not have to be oriented in any particular direction for most plant experiments because gravitropism ensures roots of plants will always grow downward and stems upward. The exception to this is when using a clinostat to simulate microgravity for experiments.

MATERIALS

- Wisconsin Fast Plants® *Brassica rapa* seeds, or other seeds, one per flask (available from Carolina Biological Supply Company, Nasco Science or other biological supply companies)
- Prepared flasks (see page 7)
- Prepared controlled-lighting seed growth chamber (see page 9)
- Logbook
- Marker pen
- Metric ruler (mm)
- Pencil with eraser tip
- Petri dish (or shallow container)
- Tweezers or forceps

SAFETY ISSUES

Clean work areas with disinfectant and wash hands before and after this activity.

PROCEDURE

1. Using the marker pen, give each seed flask its own number or other code. Record this identifying number or code in a logbook, along with the date and time the seed was planted, and the density (or density layers) of the growth medium in the flask.
2. Open the seed packet and gently pour some of the seeds into the Petri dish. Avoid touching the seeds with fingers and skin.
3. Carefully pick up a seed with the tweezers and place it, centered and on top of the growth medium in a flask (see illustration, lower left).

   Note: More than one seed may be placed in a flask.
4. Using the pencil eraser, gently press the seed one or two millimeters into the growth medium.
5. Seal the flask with its lid and place it inside of a plant growth experiment chamber. ■