

Sundews (*Drosera sp.*)

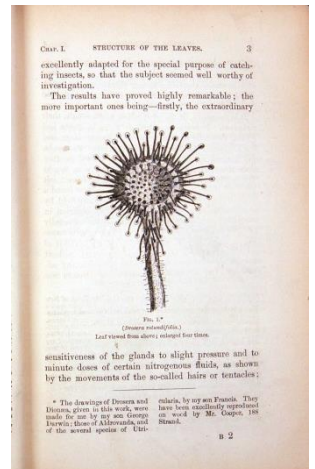
Sundews, *Drosera sp.*, comprise a genera of carnivorous plants with over 160 of species that supplement their nutrition with insects they lure, capture and digest using mucilaginous glands covering their leaves. This compensates for the poor mineral composition of soils in their natural environment. Due to this unique adaptation and phytochemical profile (including antimicrobial, antifeedant, allelopathic, and medicinal compounds), *Drosera* have been a studied extensively to elucidate many facets of plant biology.

Drosera Fun Fact!

Early studies on this genus were done by Charles R. Darwin, naturalist and author of the famous *On The Origin of Species*. Extensive studies of *Drosera rotundifolia* led him to conclude sundews, like animals, could secrete acidic fluids and ferment when correctly stimulated. The results of his and his son’s experiments were published as a book titled *Insectivorous Plants* in 1875. Even now, this remains a primary source of knowledge and understanding of this genus and forms the basis for most of our understanding of carnivorous plants.



Drosera rotundifolia growing in the ornament and mist beds in the Bovey greenhouses



Charles R. Darwin and his book *Insectivorous Plants*

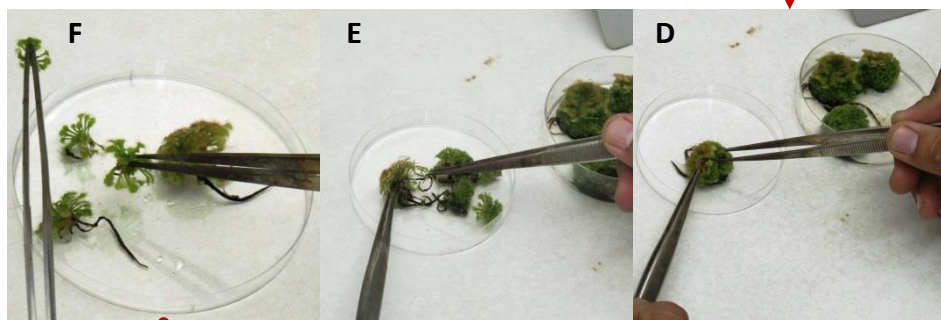
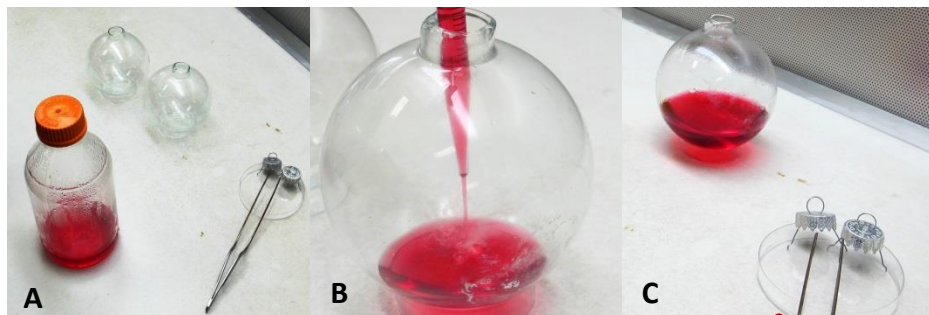
Ornaments & Outreach – GRIPP and United Way Partnership

A combination of the science of micropropagation, historical relevance of the plant, and the novelty of a living ornament led to the first Living Ornament sale in the holiday season of 2013. With over 200 ornaments sold for charity, this GRIPP-United Way partnership provided an interactive educational platform allowing a glimpse into the fascinating world of plants as well as our need for greater commitment to plant conservation and environmental consciousness while providing support for the local community and its constituents.

Inside The Ornaments

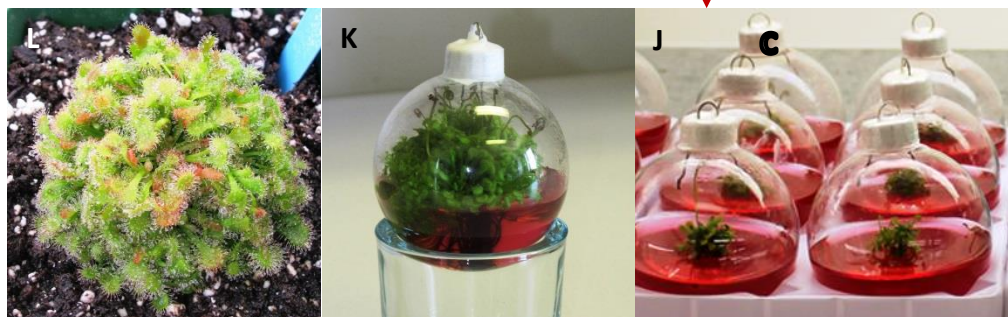
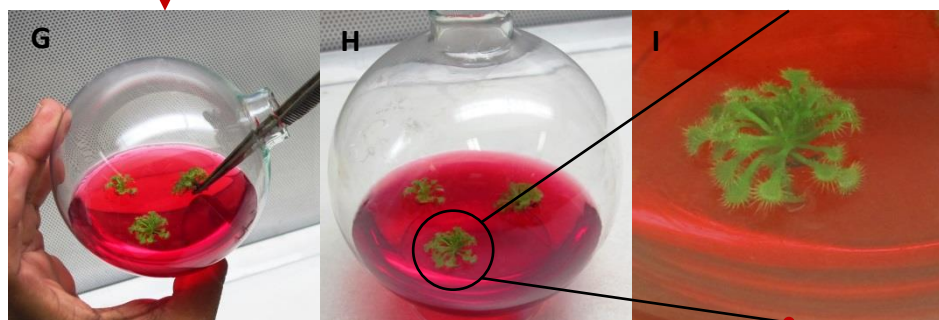
The production of the ornaments is a variation of typical micropropagation done at GRIPP for the preservation of plant germplasm. Glass ornaments with steel tops were sterilized by autoclaving at 121 ° C for 45 minutes. Cape Sundew/Venus Flytrap Pretransplant Basal Medium was prepared with the addition of Phytigel as a gelling agent, sucrose as an energy source, and food coloring to achieve desired pigmentation (red/green) in the media.

Freshly autoclaved media being dispensed into ornaments in an aseptic fashion, cooled, and solidified (A-C).



Rosettes from in-vitro Sundew plants (*Drosera rotundifolia*) were taken and trimmed to remove dead leaves as well as most of the root system (D-F).

Once trimmed, the rosettes were carefully placed inside the ornaments, taking precautions to maintain sterility. Once cultured, they were sealed using parafilm (G-I).



Ornaments were acclimatized for a week in controlled growth chambers at 25°C (J). Instructions on how to care for the ornament (K) replanting (L) , and contact information for any further questions are available at www.gripp.ca.

Note: Ornaments are made in a sterile environment, clean and free of microbial and /or other contamination. DO NOT attempt to open them unless you are ready to replant.

Living Ornaments - Frequently Asked Questions



Q. Should I feed it?

A. No. The inside of the ornament is a sterile environment and opening the vessel will lead to contamination and should not be done unless you plan to transplant the sundew (see below). The gel found within the ornament is specially formulated for carnivorous plants and contains everything needed for the plant to thrive.

Q. How do I care for it?

A. Each ornament contains a specially formulated medium that contains all of the essential minerals, vitamins, and energy for the plant to grow. The plants do not need to be watered, fertilized, or need any other special care to be happy and thrive. However, as a living growing plant, they do need to be maintained at an appropriate temperature and need some light. Typical room temperatures are ok, but be careful to keep them warm while transporting them outside. The plants will do best with indirect sunlight or being close to an artificial light source, but avoid intense direct sunlight to avoid burning them. The ornament itself is fragile and should be handled accordingly. Due to the nature of the nutrient medium, it is best to keep the ornament upright at all times, i.e. the with the ornament lid pointing directly up.

Q. How long will they live?

A. The lifespan of each ornament will vary depending on the temperature, light intensity, and general plant growth, but should survive for 2-4 months before outgrowing the container.

Q. Can I plant it when I'm done?

A. Yes, but not easily. Over the next few months, the plants will fill the container, should have well developed roots, and are capable of being transplanted. However, the plants will be accustomed to very high humidity and must be slowly acclimated to typical conditions. Additionally, due to the small size of the opening, the plants will be too large to fit out of the vessel. As such, while it is possible to transplant them, it will require special care and the plant may not survive.

Following are recommendations for how to proceed if you wish to try:

- Open the container and return it to where it has been growing to allow the plant to start acclimating
- After 2-3 days, break the container open and gently rinse the medium off of the plant under warm running water
- Plant the sundew in potting mix in a standard plant pot, water, and cover with plastic to maintain high humidity (a plastic bottle with the bottom cut off will work).
- Over the next few days, cut holes in the plastic covering to slowly reduce the humidity. Alternately, slowly move the covering to increase the size of the opening to achieve the same reduction in humidity.
- Eventually, the plastic cover can be removed entirely