



# MUSHLUMe UFO™

Instruction Manual

\* Please read or your UFO  
may self destruct ☹️







**Congratulations!** You are now the proud owner of the coolest, smartest, bioluminescent-est vessel in the galaxy:

# MUSHLUME UFO™

The Mushlume UFO™ is a solar-powered showpiece for one of the world's most extraordinary phenomena: bioluminescence. This bespoke aquarium houses living organisms from the ocean (phytoplankton called dinoflagellates or dinos as they're nicknamed) that glow brilliantly blue like an interactive galaxy of light when swirled at night.

## About Urbz

Urbz® was founded in 2018 by Roark, Maryann and Andy Bass in Carlsbad, California. We are a family of artists, biologists and dreamers who love playing in Nature. Our mission is to fuel imagination and enrich our understanding of the relationship between nature, science and humanity.

We hope you enjoy the Mushlume UFO and caring for dinoflagellates as much as we do. As Shrek would say, "dinoflagellates are like onions. They have layers." There are so many layers of science life lessons embedded in these tiny cells. Enjoy exploring and discovering them all!

[www.urbz.io/onions](http://www.urbz.io/onions)

## INSTRUCTIONS

### Filling the Mushlume UFO

Open the Dinoflagellate pouch (provided separately). Use a coin, lucky or otherwise, to unscrew the Mushlume UFO cap and set aside. Place the hole of the Mushlume UFO over the dinoflagellate pouch nozzle. Gently tip the dinoflagellate pouch until all of the contents are poured into the Mushlume UFO. Replace the cap on the Mushlume UFO and tighten using your coin of ambiguous luck.

### Bioluminescence

The Mushlume UFO will only bioluminesce during nighttime hours, in the dark while in motion (swirling). The Mushlume UFO will not light up during the daytime hours, even in a dark room.



**Fun Fact #1:** During the day, the dinoflagellates use light to make their own energy through a process called photosynthesis. The Mushlume UFO will become bioluminescent after being in the dark for about an hour into its nighttime phase (remember, it only glows while swirling).



**Fun Fact #2:** Dinoflagellates have a circadian rhythm (sleep-wake cycle) just like us human Earthlings. These dinoflagellates were grown on a schedule of 12 hours of Light from 5am to 5pm Pacific Time (PT) and 12 hours of Dark from 5pm to 5am PT.

## Dinoflagellate Care

**LIGHTING** Keep your Mushlume UFO in partial sunlight or artificial room light (no direct sunlight). Give the Mushlume UFO approximately 12 hours of consistent light and 12 hours of constant dark each day.



**Fun Fact #3:** It's possible to change the circadian rhythm of dinoflagellates but they will take time to adjust to their new schedule (2-3 weeks to fully adjust). It's like when we travel to a different planet time zone and our bodies must adapt to a new bedtime / wake-up schedule.

**TEMPERATURE** The ideal temperature for the Mushlume UFO is 68°F (20°C). The temperature can range from 63°F to 77°F (17°C to 25°C) without harming the dinoflagellates. Sudden changes in temperature are not recommended and may be harmful to the dinoflagellates.

**DENSITY** As the dinoflagellates begin to thrive you may notice the liquid in the Mushlume UFO become more turbid and yellowish in color (also brighter in bioluminescence). This is a sign of a healthy culture... If a less dense culture is preferred, dilute the dinoflagellates with Urbz VitaminSea.

**DINOFLAGELLATE LIFE SPAN** In optimal conditions Urbz dinoflagellates will divide once every 7 days (via a process known as cell division where one cell splits into two cells). As the dinoflagellate cells divide and the culture becomes denser, the dinos will need Urbz VitaminSea to continue to grow. VitaminSea will give the dinos more water to expand into and the vitamins and minerals in the sea water will nourish the cells.

**FEEDING** Add VitaminSea to the Mushlume UFO every 2 to 3 weeks (or more frequently as needed). When the dinoflagellate culture is healthy and dense, replace 1/3 to 1/2 the volume of dinoflagellates with VitaminSea.



**Pro Tip:** Pour off the excess dinoflagellates into a clean container (like a water bottle). Use them for an experiment or purchase an extra Mushlume UFO to spread the spores of nerdy fun with a friend.

**CRASH** If the dinoflagellates stop bioluminescing the culture may have crashed and will need to be replaced. Replacement dinoflagellate pouches are available at [www.urbz.io](http://www.urbz.io). The Mushlume UFO vessel can be cleaned and re-used.

We guarantee that your dinoflagellates will arrive alive and healthy.

**Visit [www.urbz.io/dinocare](http://www.urbz.io/dinocare) for more tips.**

