

DINOPET™

a living bioluminescent pet



INSTRUCTIONS PLEASE READ

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CONGRATULATIONS!

You are now the proud owner of the coolest, smartest, bioluminescent-est pet on the planet:



But, before your new friend is ready to show off his skills, there's some important stuff to learn to ensure your Dino Pet stays happy and bright.

Before you introduce the suspended dinoflagellates to their new home (the Dino Pet), carefully read the **SUPER IMPORTANT INFO** below.

SUPER IMPORTANT INFO

PAY CLOSE ATTENTION, THIS INFO IS VITAL TO YOUR DINO PET'S VITALS

1. UNPACKING YOUR DINOS

Remove the bag labeled *Dinoflagellates* from the shipping box. Follow the temperature and lighting instructions below. Your dinos may be kept in the bag they arrive in for several days or transferred directly to your Dino Pet.

2. TEMPERATURE

Keep the dinos at a temperature range between **65-75° F**.

3. LIGHTING

Place the dinos in a well lit room for around 12 hours (but avoid direct sunlight and light bulbs that get too hot). Turn off the lights,

or move the Dino Pet to a dark area, to ensure the dinos spend 12 hours in darkness before giving them more light (see **Photosynthesize** section for more information).

4. BE PATIENT

Your Dino Pet may not light up on the first or even second night. The shipping process can be a little rough. You may need to give the Dino Pet a day or two of light (as described above) before it glows.

INTRODUCING THE

DINOPET™

The **Dino Pet** houses living organisms from the ocean (creatures called **Dinoflagellates** or dinos as they're nicknamed) that live in saltwater. The Dino Pet requires proper care and attention to stay healthy just like a pet or house plant. Carefully reading and following these instructions will enable you to have the best experience with your Dino Pet.



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WARNING!

**NOT FOR CHILDREN UNDER
5 YEARS OF AGE**

CHOKING HAZARD
CONTAINS SMALL OBJECTS

DO NOT DRINK
CONTAINS LIVING ORGANISMS
AND SALTWATER

FILL » PHOTOSYNTHESIZE » SHAKE » ILLUMINATE

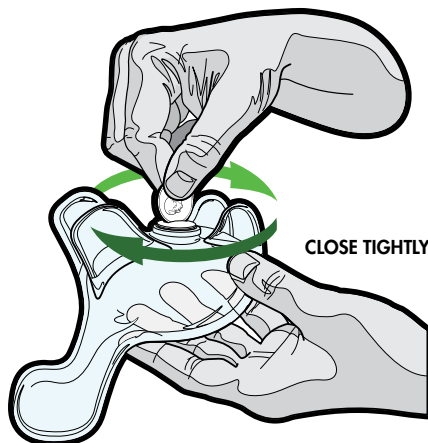
IMPORTANT STEPS TO FILLING YOUR DINO PET

1. Thoroughly wash your hands to make sure your nasty human germs don't make the dinos sick.
2. Carefully unscrew the cap on the plastic bag labeled **DINOFLAGELLATES**. Set the bag upright next to a sink or drain. Repeat this process for the **Dino Food Bag**.
3. Turn Dino Pet upside down over a sink or drain. Use a coin, lucky or otherwise, to remove the cap from the Dino Pet's belly by rotating counter-clockwise.
4. Insert the spout from the **DINOFLAGELLATES** bag into the Dino Pet's belly and carefully empty the contents of the bag into the Dino Pet.



Insert spout into Dino Pet's belly and carefully empty.

5. Continue to fill your Dino Pet with the Dino Food bag by inserting the spout into the belly until you've reached your desired fill level.
6. Replace the cap in the Dino Pet's belly and tighten firmly with your coin of ambiguous luck.
7. Wipe any spilled contents from the exterior of the Dino Pet, and voila! Your Dino Pet is almost ready to glow (See: **BE PATIENT** on page 01).

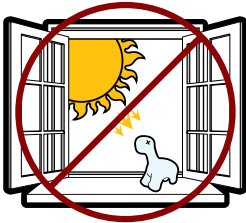


After filling, replace cap and tighten firmly.

FILL » PHOTOSYNTHESIZE » SHAKE » ILLUMINATE

IMPORTANT STEPS TO FEEDING YOUR DINO PET

AVOID DIRECT SUNLIGHT



Placing your Dino Pet in direct sunlight can cause it to overheat and drive your dinos to the brink of extinction.

The Dino Pet wants to be in the light during the day and in the dark during the night. Without adequate light during the day, the Dino Pet will not produce light at night. And without sufficient time in the dark (**AT LEAST 30 MINUTES**), it will not light up when it's time to put on a light show. We recommend giving the Dino Pet consistent light (day) and dark (night) cycles — 12 hours of light and 12 hours of dark*.

But remember, **NO DIRECT SUNLIGHT!**

*Until now, your dinoflagellates were raised in San Diego, California. They've been waking up at 5am and going to bed around 6pm PST. This is the routine they're used to. This routine can be changed, but you have to be aware of the routine they've been on and be patient while they adapt to their new environment and routine (see **Tips from the Pros** for more information).

NO SUN, NO WORRIES!

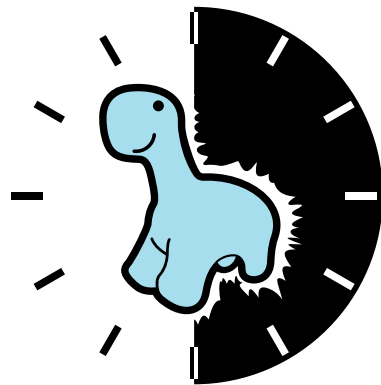
If you live in a place that doesn't see much sunlight, most home and office lights will work just fine. Just make sure not to use a lamp that will heat the Dino Pet's contents, like high pressure sodium and high wattage incandescent bulbs. LEDs and Fluorescent lights tend to be the safest. Place your Dino Pet ~ 2-3 feet away from the light source.

IN REVIEW

LEDs and fluorescent bulbs = **GOOD**.
High pressure sodium, high wattage incandescents, and other hot bulbs = **BAD**.

Much like larger dinosaurs (and other pets), the Dino Pet has a sleep-wake schedule (**circadian rhythm**). A consistent schedule is essential to the health and bioluminescence (glowing light) of the Dino Pet.

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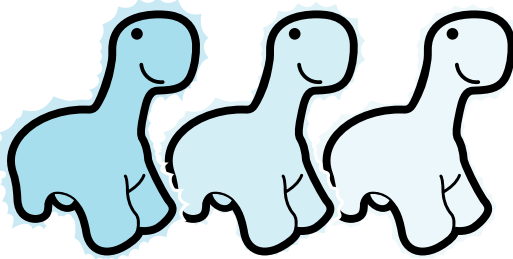


LIGHT≈10-14 HOURS

DARK≈10-14 HOURS

FILL » PHOTOSYNTHESIZE » **SHAKE** » ILLUMINATE
CAREFULLY SHAKE YOUR DINO PET

Shaking your Dino Pet too hard can hurt the dinoflagellates within, or even **KILL** them. Please help us prevent Dino cruelty by shaking carefully and respectfully.



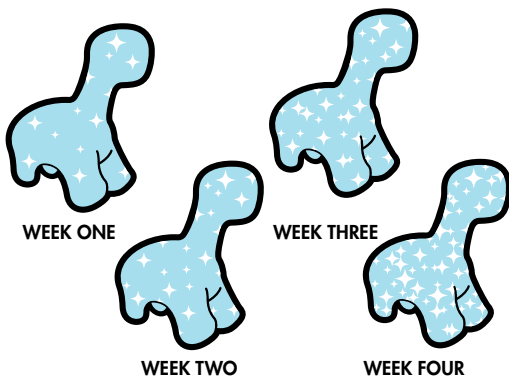
FIRST SHAKE SECOND SHAKE THIRD SHAKE

These are living creatures. Each night bioluminescence (light) will diminish after continual shaking.

DO NOT SHAKE VIOLENTLY!
This will damage and kill the dinoflagellates!

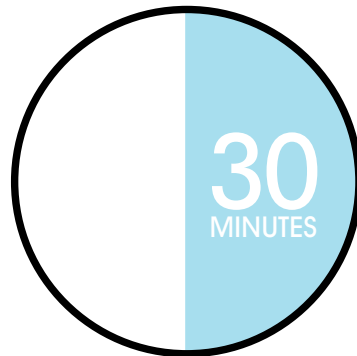


FILL » PHOTOSYNTHESIZE » SHAKE » **ILLUMINATE**
TIPS FOR ILLUMINATING YOUR DINO PET



Each week the dinoflagellates will divide and increase in number. As numbers increase—light will increase.

It is important to view in complete darkness.



DINO must be in complete darkness for AT LEAST 30 MINUTES before bioluminescence (light) is viewable.

DINO FOOD

EVERY 4 TO 6 WEEKS ADD DINO FOOD

To extend the life of your Dino Pet, you'll need to give it a little food periodically. These dino cultures have been known to grow for several months without anything except adequate lighting.

INSTRUCTIONS

1. Thoroughly wash your hands.
2. Carefully unscrew the cap on the black plastic bag of **DINO FOOD**. Stand bag upright next to a sink or drain.
3. Hold Dino Pet over a sink or drain and use a coin or flat object to remove the cap from the Dino Pet's belly by rotating counter-clockwise. Slowly turn Dino Pet towards the upright position to empty approximately half of the Dino Pet's contents. Turn your Dino Pet upside down again once the desired amount has been emptied.
4. Insert the DINO FOOD bag spout into the Dino Pet's belly and carefully fill the Dino Pet until you've reached your desired fill level.
5. Quickly replace the cap in the Dino Pet's belly and tighten firmly with a coin.
6. Replace the cap on the DINO FOOD BAG.
7. Store DINO FOOD in a cool dry place.



Empty approximately half of the Dino Pet's contents and refill with Dino Food.



Order **Dino Food** at [BIOPOP.COM](https://www.biopop.com)

DAYTIME DINOS

Are you an educator who wants to show the magic of the Dino Pet off to your pupils, or do you just want to be able to show off your Dino Pet’s skills during the day? You can flip the Dino Pet’s circadian rhythm on its head by placing the Dino Pet in an area that receives no natural light, and hooking up LEDs or a fluorescent lamp to a timer set to give it light during the night. You’ll want to make sure to keep it in the dark during light hours, so be mindful of where and how you choose to show it off. The darker the room, the better the show.

Note: It takes about two weeks for the dinos to adjust to a new schedule (i.e. flipping their circadian rhythm).

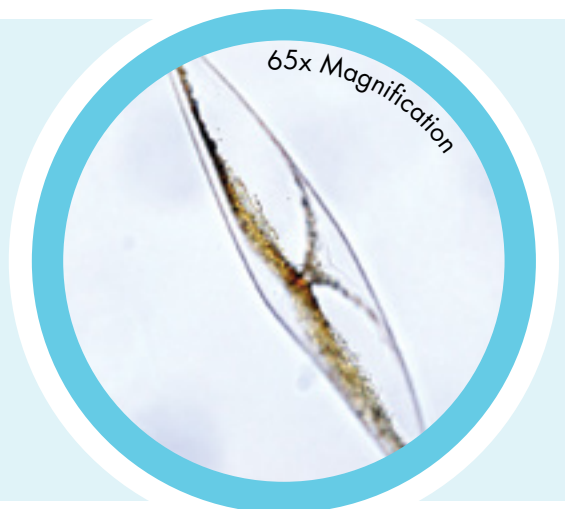


Visit BIOPOP.COM for lesson plans and more!

INSTANT EXPERT

THE SCIENCE BEHIND THE DINO PET

- Species:** *Pyrocystis fusiformis*
(*P. fusiformis*)
- Domain:** Eukaryota
- Kingdom:** Chromalveolata
- Phylum:** Dinoflagellata
- Order:** Gonyaulacales
- Suborder:** Goniodomineae
- Family:** Pyrocystaceae
- Genus:** Pyrocystis
- Size:** Up to 1mm in length



INSTANT EXPERT

THE SCIENCE BEHIND THE DINO PET

THE BASICS

The dinoflagellates used in the Dino Pet are a species of marine plankton, named *Pyrocystis fusiformis*, that have the ability to bioluminesce in response to mechanical agitation.

BIOLUMINESCENCE

The blue-green bioluminescence emitted by *P. fusiformis* is a product of a chemical reaction in microsomes surrounding the cell's vacuoles. Each cell has an average of **4,500** microsomes where the protein luciferin is oxidized by the enzyme luciferase in the presence of *Adenosine triphosphate (ATP)* and oxygen—both are by-products of photosynthesis. **It's one big cycle:** chemical energy is transformed into light energy.

Sunlight is turned into chemical energy through photosynthesis and stored as ATP, and the chemical reaction in the microsomes turns the chemical energy in ATP into light energy.

PURPOSE OF BIOLUMINESCENCE

The Burglar Alarm Theory — Being at the bottom of the food chain stinks. Many scientists believe that *P. fusiformis* combats this unfortunate food chain placement by emitting light when they're disturbed by predators. The bioluminescence acts as a Bat Signal of sorts, spotlighting the attacker so any bigger-badder creatures in the area can swoop in for the save.

LIFE CYCLE

P. fusiformis reproduces asexually by generating *aplanospores* or *zoospores* inside the cell wall. These new cells then grow to the size of the parent cell, divide, and become a pair of new cells.

CIRCADIAN RHYTHM

P. fusiformis produces bioluminescence on a circadian rhythm. To obtain energy, *P. fusiformis* photosynthesizes during the day and releases that energy at night when mechanically stimulated.

TRIVIA

It is estimated that there are over **2,000** living species of dinoflagellates including marine, freshwater, and parasitic.

Just large enough to be seen by the naked eye, *P. fusiformis* is named for the botanical term for a cell or plant structure with a spindle-like shape that tapers at both ends (like an American football).

P. fusiformis' chloroplasts transform the cell shape by moving inward towards the nucleus at night and outwards towards the cell wall to photosynthesize during the day. Moving in the opposite direction are vacuoles and their thousands of microsomes that move outward at night to emit light.

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WARRANTY INFO

We guarantee that your dinoflagellates will arrive alive and healthy.

Please visit

biopop.com/dinocare
for troubleshooting and
warranty information.



ABOUT biopop™

BioPop has a passion for science, art and design. Our work can be seen in the Smithsonian National Museum of Natural History and in homes and offices around the world. BioPop is focused on developing living art concepts that fuel the imagination, provide new answers for the way we live and enrich our understanding of the relationship between nature, science and humanity.

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