# WHAT AFFECTS THE ACTIVITY OF JELLYFISH

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## Purpose

To research whether an external factor affects the condition of jellyfish, or the rhythm of their bodies.

## Experiments and Results

We experimented with 8 jellyfish (three *aurelia* and five *cassiopea*.)

We researched the condition of jellyfish by counting the number of times their body opened and closed. We supposed that the cause of the changes of the number of times their body opened and closed are either water temperature light-dark condition or rhythm of their bodies.

We fed them prescribed amount of a feed at 6 p.m.

### Experiment 1 Rhythm of their bodies

We researched the changes of the number of times their body opened and closed. depending on the time. So, we measured the number of times their body opened and closed. in 5 minutes every 6 hours from 0 a.m. We kept both water temperature and light-dark condition stable by using an incubator for *aurelia* and a heater for *cassiopea*. According to the preceding study, it was confirmed that the condition of *cassiopea* changes between in the day and in the night. So, we measured the rhythm in their bodies in 24 hours. We couldn't consider the connection between the condition of *aurelia* and the time with the result of only one experiment. So, we did the same experiment again.

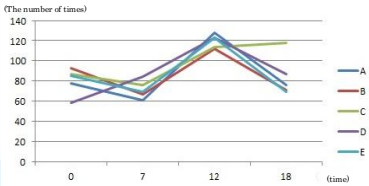


Figure 1 The change of activities of *aurelia* depending on the time

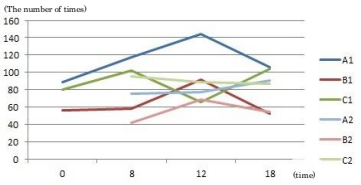


Figure 2 The change of activities of cassiopea depending on the time

### Experiment 2 Water temperature

We researched the changes of the number of times their body opened and closed. depending on the water temperature. So, we changed the water temperature and measured the number of times their body opened and closed. in 5 minutes. We put *aurelia* in water of 10 ℃,15℃, and 20℃, and *cassiopea* in water of 20℃ and 25℃.We kept light-dark condition stable by using a fluorescent light. Considering the connection between the rhythm of their bodies of *cassiopea* and the time, we chose the time of measurement to be around 6 p.m.

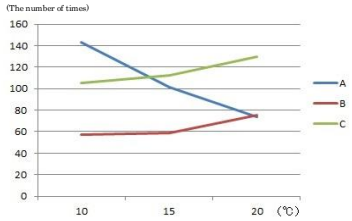


Figure 3 The change of activities of aurelia depending on the water temperature

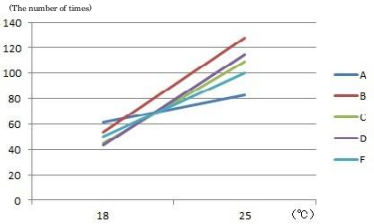


Figure4 The change of activities of cassiopea depending on the water temperature

### Experiment 3 light condition

We changed light condition using fluorescent light and measured the number of opening and closing their umbrellas in 5 minutes. We used incubator not to change water temperature. Considering the connection between the rhythm in their bodies of *cassiopea* and the time, we unify the time of measurement around 6 p.m.

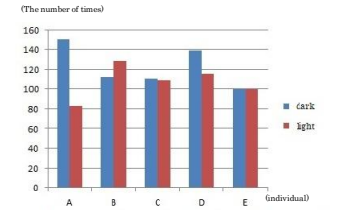


Figure5 The change of activities of *cassiopea* depending on the light-dark conditio

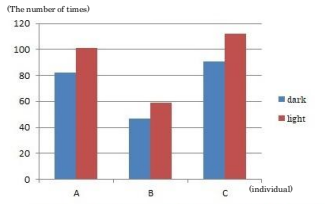


Figure6 The change of activities of aurelia depending on the light-dark condition

## Summary and Consideration

**Table1 The connection between each condition and activity of jellyfish**

| | rhythm of their bodies | water temperature | light-dark condition |
|---|---|---|---|
| aurelia | × | × | ○ |
| cassiopea | ○ | ○ | × |

From the result of experiments, activity condition of *aulelia* has a relationship with light condition.

Activity condition of *cassiopea* has a relationship with water temperature. And *cassiopea* has rhythm in their bodies over 24 hours.

Aurelia lives in the world sea, and they can adapt to various water temperatures. So their actions seem not to be affected by water temperature. On the other hand, *cassiopea* inhabit the tropical sea and the subtropical sea, so we think they couldn't adapt to low water temperature, so they decrease the times their body opened and closed. at 20℃.

## Reflection

About the experiment of rhythm of their bodies, we should consider doing experiments for several days. But we could do only a 24 hours experiment because we didn't have enough time. So we couldn't confirm if there is rhythm in their bodies which needs more than 24 hours. We should have increased the number of experiments also and about other experiments to get accurate results.

And about time which we fed, we should have made uniform interval of the feed time and time of experiment to keep influence of feed on a state of actions to a minimum.