THE GLOW GUIDE

Integrating living organisms in design could offer alternative and more sustainable ways of producing and using products. The integration of bioluminescent organisms is a relatively new and unknown subject. In this project , the characteristics of a bioluminescent bacteria, P. phosphoreum, are researched and related to design.

The design related insights are gathered by conducting a literature research and experiments. These insights are translated into design guidelines and implemented into an example scenario with the aim to encourage and inspire interested designers in the creation of products with integrated bioluminescent organisms.

GUIDELINES

ENCAPSULATION
create the habitat

- **contain** the culture and **protect** it from contaminants
- integrate an opening for **O2** to enter **CO2** to exit
- keep temperature within **2-30°C** and optimally within **15-18°C**
- fill with **UASW medium** to provide nutrients, a new culture needs new medium
- optimize intensity by **enlarging** the **surface** subjected to air
- use **permeable materials** to provide oxygen without movement
- position **wearables** on body parts that disperse **minimal heat**
- add **viable cells** in liquid or agar to start the culture

PERPETUATION
prolong lifetime

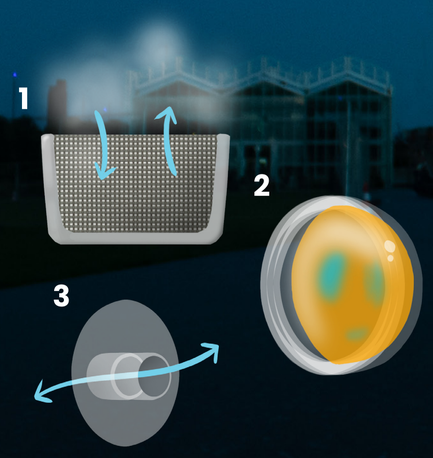
- provide sufficient and storable **back-up medium**
- enable **sterile** medium refreshment using an opening to **dispose / refill** the entire culture
- provide agar inoculum **storable** for **18 days** at 25°C and at least **35 days** at 4°C
- enable **sterile inoculation** using an integrated or separate **agar inoculum**

INTERACTION
suitable stimulation

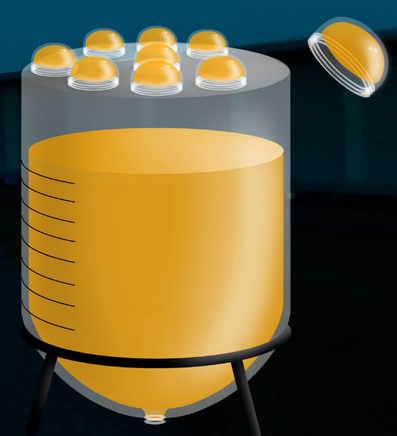
- able to emit a 13 hour **homogeneous glow** illuminating its direct surroundings
- subject to more **dynamic movement** to increase light intensity
- make use of the **light** emitted by the **stored agar**
- inform users about the **duration** of the **lag and light phase**

SCENARIO

1 gas exchange membrane
2 integrated agar inoculum
3 valve for medium



vessel holding the **back-up medium** and **agar incocula** to perpetuate for 10 x 18 days



luminescent **vest** providing **visibility** during nighttime **sporting activities**

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