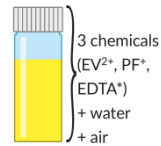


Photosynthesis and respiration – the photo-blue-bottle experiment

In order to explore the processes within photosynthesis and cellular respiration, the photo-blue-bottle-experiment will help us find out

- which processes there are
- under which conditions they take place
- and which benefits arise from them from them for animals and human beings

E1 Experiment: Using the provided material (hot plate, torch with different light colours, UV torch, glass beads), explore how to drive a chemical reaction in the vial. This becomes evident when a blue substance generated in the reaction becomes visible within the yellow solution. Jot down your findings in the chart below.



Hint: colours within the visible light spectrum

high in energy low in energy

energy form	colour, temperature, etc.	observation

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E2 Is the statement true or false? (pair work)

Prove or disprove the following hypotheses by conducting an experiment – or by suggesting what we should do to prove or disprove it. (And again, if you want to speak like a scientist, use the given phrases.) Document your experiments and your findings briefly in your folder (key words and sketches suffice).

Prepare a short overview of your findings that you can report to the class.

hypothesis - an idea or explanation of something that is based on a few known facts but that has not yet been proved to be true or correct (*Hypothese*)
prove – beweisen;
disprove – widerlegen

Seven hypotheses

Hypothesis 1

In order to take place, the reaction YELLOW → BLUE needs energy supply.

energy supply – here: it needs energy
(Energieversorgung)

Hypothesis 2

The reaction YELLOW → BLUE does not work with any given light from the visible spectrum.

any given light – irgendein Licht

Hypothesis 3

The reaction BLUE → YELLOW only needs kinetic energy.

kinetic energy /kɪˈnetɪk/ – energy produced by movement
(Bewegungsenergie)

Hypothesis 4

The reaction cycle YELLOW → BLUE → YELLOW runs only two times.

run - verlaufen

Hypothesis 5

The reaction BLUE → YELLOW needs oxygen.

Hypothesis 6

The reaction YELLOW → BLUE only takes place if the temperature is above 5°C

Hypothesis 7

The PBB-reaction cycles correspond to the natural reaction cycles of photosynthesis and cellular respiration.

(to) correspond to sth. – to match something, to be the same as something (entsprechen, übereinstimmen mit)