

Online-Experiments

Online experiments are designed for the general public, for high schools and, in part, for university undergraduate courses. They allow for simple scientific experiments that can be carried out in the classroom but also at home. No hazardous chemicals are used, and the manual provides all safety instructions.

Participants receive a “kit” with all necessary material and a manual with precise working instructions by mail. The experiment is supervised via video conference by an experienced scientist.

The number of participants is limited to six persons or a five groups of max. 3 persons (max. total number of 15).

After one online experiment, teachers or lecturers can usually repeat the experiment by themselves with other groups. Additional material can be ordered for a small fee. The time and costs for the experiments are given in the descriptions.

DNA isolation

This very simple experiment is introduced by a short lecture on the structure and function of genetic material DNA.

The participants then isolate DNA from different fruits, vegetables or meat and compare their results.

The experiment (including lecture) will take about two hours.

The costs will be about 220€ including a six kits for the experiment (exact costs upon request).

Plant growth

The model organism Lemna (duckweed) is used to learn the requirements for optimal plant growth. The fast growing aquatic plants are set up under various conditions and with the addition of various additives to measure growth. The online experiment is introduced by a lecture on the properties and the handling of duckweed. Then setting up the experiment is supervised by an experienced scientist (1,5 hours). After 5 or 6 days, the intermediate results can either be reported to the supervisor by mail or the class can discuss the results in a second session (1 hour).

After 10 or 15 days, the final results will be presented by video conference

and the data will be analysed together with the supervisor. Since the same experiment is carried out by several groups, it will be possible to do some statistics to validate the data (1,5 hours).

The experiment takes three sessions over 10 or 15 days or two sessions plus e-mail reporting. The costs (including experimental instructions, six sets of plants and other materials) will be around 300€ (exact costs upon request). Plants can be easily propagated and used for further experiments (to be announced in the near future).

Duckweed is an ideal organism for various applications: it can serve as a nutritious food for humans and animals, it can be used for water remediation and removal of toxic components from water, it can serve as compost and as a source for bioenergy. We are currently developing experiments to address these applications.