

The Scientific Method, | Topic Notes

Biology is the study of life. Areas of biology include **anatomy** (the study of form and function of an organism), **botany** (the study of plants) and **zoology** (the study of animals).

- **Microorganisms** are living things that can be seen only with the aid of a microscope.
- **To replicate** means to make a copy of. Viruses replicate and do not reproduce. This is one reason why they are considered to be non-living.
- The **scientific method** is a process of investigation carried out in order to explain observations made in the natural world.
 1. **Observation**-the taking in of information received about the natural world.
 2. **Hypothesis**-an educated guess or an idea based on an observation.
 3. **Experiment**-a test to determine the validity of a hypothesis.
 4. **Collecting & interpreting data**-the results of measurements or observations.
 5. **Conclusion**-an explanation of the results.
 6. **Analysing conclusions**-explaining new knowledge in relation to the existing knowledge.
 7. **Reporting & publishing results**
 8. **Development of theory and principle.**
- **Petri dish**: a shallow circular dish used for culturing, or growing, bacteria and other microorganisms.
- **Theory**: a comprehensive explanation of an important aspect of nature supported by results gathered over a long period of time.
- **Law/principle**: a definite, factual explanation of an important aspect of nature.
- **Variables** are factors that change in the course of an experiment.
- **Control**: a factor in an experiment that provides a standard with which the results of an experiment may be compared.
- **Random selection**: is the process of choosing, without method or conscious choice, subjects or items to be scientifically tested.
- **Replicate**: a repeat of an experiment.



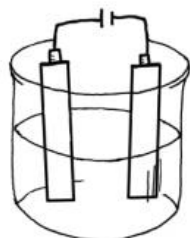
1. Ask a Question



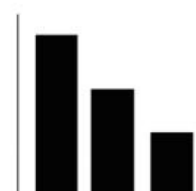
2. Do Some Research



3. Formulate Hypothesis



4. Test with Experimentation



5. Record & Analyze Data



6. Draw Conclusion

- **Double-blind testing**: an experiment where neither the tester nor the patient knows what treatment is being given.
- **Placebo**: a substance with no medication, used as a control in an experiment.
- **Light year**: the distance light travels in one year, almost 10 trillion km.
- **Alexander Flemming** discovered the first ever antibiotic **penicillin** by accident when he was researching the influenza virus.