MICHIGAN STATE UNIVERSITY | Extension

4-H Biological Sciences

18 U.S.C. 707

SNAPSHOT 4H1622

WHAT'S IT ALL ABOUT?

Biology is the study of life. The 4-H biological sciences project allows you to explore plant and animal life. It can encompass many different plant and animal projects, such as gardening or horses, by allowing you a deeper exploration of the biological connections in these projects.

- Practice the scientific investigation process; discover science through questions.
- Learn the parts and functions of a plant or animal cell.
- Explore plants or animal DNA, genes and heredity.
- Identify tissues, organs and systems within plants or animals.
- Study respiration or digestion.
- Identify plant or animal parts and compare a part's form to its function.
- Explore careers within the field of biological sciences.

THE BIG PICTURE

Starting Out:

- Learn the steps in the science process.
- Find a picture of an animal or plant cell and compare them.
- Learn to properly use a microscope to view cells.
- Study the history of DNA and genetics.
- Identify the main parts of a plant or animal and know their functions.
- Select a young plant or animal species to watch its development and growth over time.
- Study the requirements necessary for plant and animal life.

Learning More:

- Investigate the scientific process through your involvement in a science fair project.
- Explore and observe various forms of life, from one-celled to many-celled organisms.
- Complete a genetic study with plants, animals or yourself.
- Compare the parts and living processes of a plant's biology to an animal's.
- Study the form or shape of a plant or animal part and explore how it adapted for a function.
- Conduct a scientific exploration with plants or animals to explore a life process, such as photosynthesis in plants or digestion in animals.

Expanding Horizons:

- Use the scientific process to explore a biological science problem; record and present your findings.
- Discover how cells are organized to form tissues, tissues to organs, and organs to systems.
- Investigate heredity and research how genetics plays a role in plant and animal husbandry and diseases.
- Study the scientific organization of all living organisms and find out how to use a dichotomous key for proper identification.
- Explore the use of microbial sciences in environmental cleanup and food safety.
- Research biological science careers and job shadow or interview a professional in one or two of these fields.

CURRICULA & RESOURCES

Michigan 4-H Curricula

- 4-H Science Blast in the Class! Teacher's Guide: *http://4h.msue.msu.edu/resources/4h_science_blast_in_class*
- 4-H Children's Garden: *http://4hgarden.cowplex.com/*

Curricula — Other States

- University of Massachusetts Extension: *http://mass4h.org/programs/set-resources*
- Utah State University Extension: *http://extension.usu.edu/waterquality/htm/science-fair-project-ideas*
- Iowa State University Extension: *http://www.extension.iastate.edu/4h/page/science-engineering-technology-projects*
- Cornell Lab of Ornithology: *http://www.birds.cornell.edu/citsci/projects*

National 4-H Curricula

- Biotechnology Activities: *http://www.4-h.org/resource-library/curriculum/agriscience/biotechnology-activities/*

4-H Biological Sciences Project Snapshot

FOCUS ON BIOLOGICAL SCIENCES

Science

- Complete a plant or animal dissection to identify internal tissues, organs and systems.
- Research plant varieties or animal breeds and their development over time.
- Complete a study of embryology by incubating and candling poultry eggs.

Life Skills

- Use critical-thinking, problem-solving and decision-making skills to help you make good decisions about project management.
- Keep records on your project expenses and income.
- Practice personal resiliency through successes and challenges in your project.

Communication

- Develop a science fair project based on a biological science question and present your findings.
- Present biological science information to members of a youth club or organization studying this topic.
- Demonstrate how to properly use a microscope to other young people.
- Write an article for a school paper, website or other media source explaining something you have learned in biological sciences.

Citizenship & Leadership

- Work as a team with other young people to create a solution to a biological science issue that concerns your community.
- Participate in a 4-H Citizen Science project.

HOW CAN YOU GET INVOLVED?

- Contact your local Michigan State University (MSU) Extension office for workshops, activities and events.
- If you are interested in a college education in the biological sciences, visit MSU's website at *www.msu.edu* to explore those majors.

Adapted with permission from The Iowa 4-H Hot Sheets by Iowa State University Extension, 2011, Iowa 4-H Project Hot Sheet. Retrieved from *http://www.extension.iastate.edu/4h/projects/*