OUR LADY OF FATIMA UNIVERSITY

COURSE UNIT

BACHELOR OF SCIENCE IN COMPUTER SCIENCE:
HUMAN BIOLOGY

COURSE MODULE	COURSE UNIT	WEEK
1	1	1
Introduction to Human Biology		

CHECK LIST

- ✓ Read course and unit objectives
- ✓ Read study guide prior to class attendance
- ✓ Read required learning resources; refer to unit terminologies for jargons
- ✓ Proactively participate in classroom discussions
- ✓ Participate in weekly discussion board (Canvas)
- ✓ Answer and submit course unit tasks

UNIT EXPECTED OUTCOMES (UEOs)

At the end of this unit, the students are expected to:

Cognitive:

1. Examine health, social, and environmental issues related to human existence
2. Enumerate the different characteristics of life
3. Describe how life can be organized to different levels

Affective:

1. Listen attentively during class discussions
2. Challenge ideas and opinions raised by the classmates and instructors with tact and respect.
3. Appreciate how the biological concepts apply to human beings.

Psychomotor:

1. Participate actively during online and face-to-face discussions

REQUIRED READINGS

Goodenough, J. and McGuire, B. A. 2011. Human Biology. Majority of the modules are based on the book Biology of Humans (4th Edition): Concepts, Application, and Issues (pp. 1-13). Pearson

STUDY GUIDE

How do we know that an organism is alive? There are seven characteristics of a living organism, and these include:

1. Presence of nucleic acids, proteins, carbohydrates, and lipids.
    1. These four molecules are considered as molecules of life, and each molecule play an important role in the life of an organism

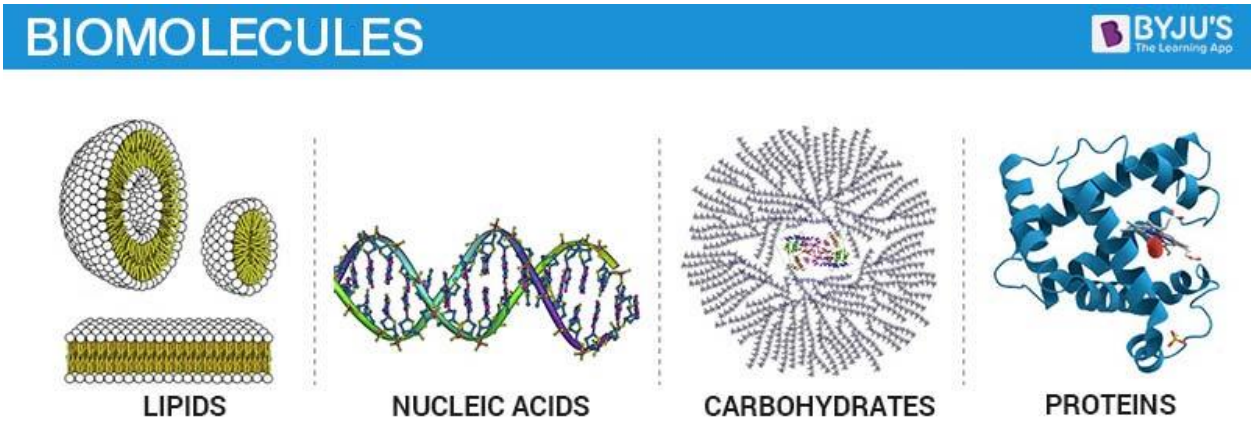

Image from: https://byjus.com/biology/biomolecules/ (Links to an external site.)

2. Composed of cells
    1. cells are the smallest unit of life
    2. Cells come from pre-existing cells, and they can divide to form new cells

3. An organism may have one or multiple cells.

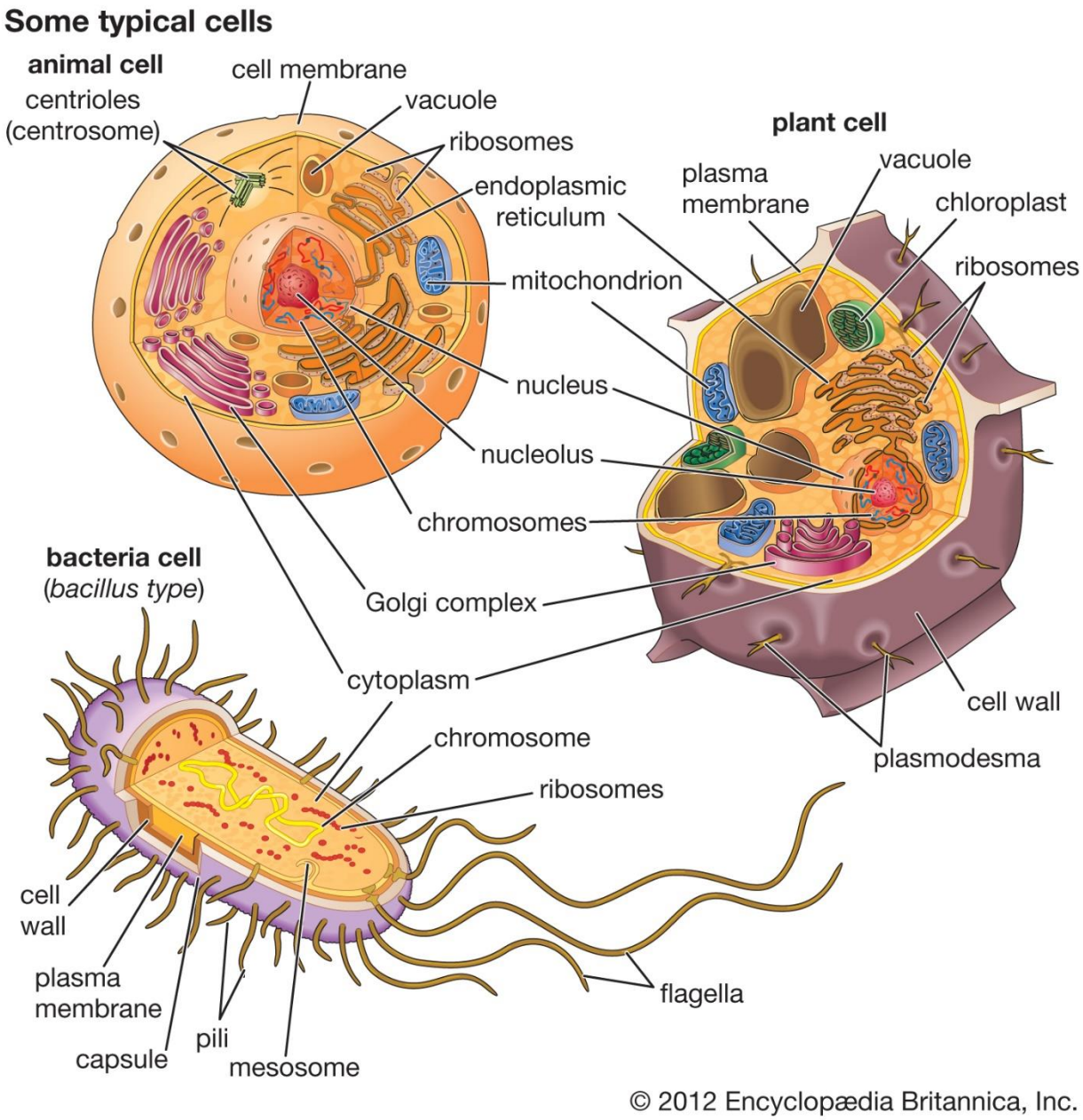

Image from: https://www.britannica.com/science/cell-biology (Links to an external site.)

3. Growth and Reproduction
    1. New individuals are generated that carries the genetic material of their parents
    2. Reproduction can be in the forms of:
        1. creating exact copies of themselves

2. Combining genetic materials to create a new individual

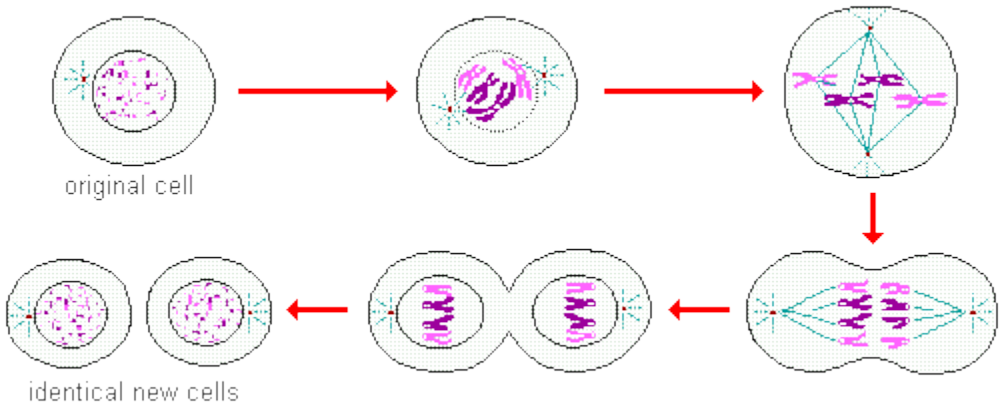

Image from: https://www2.palomar.edu/anthro/biobasis/bio_2.htm (Links to an external site.)

4. Metabolism

    1. Inside an organism, chemical reactions occur that allows the cell to extract energy and transform it to do many kinds of work

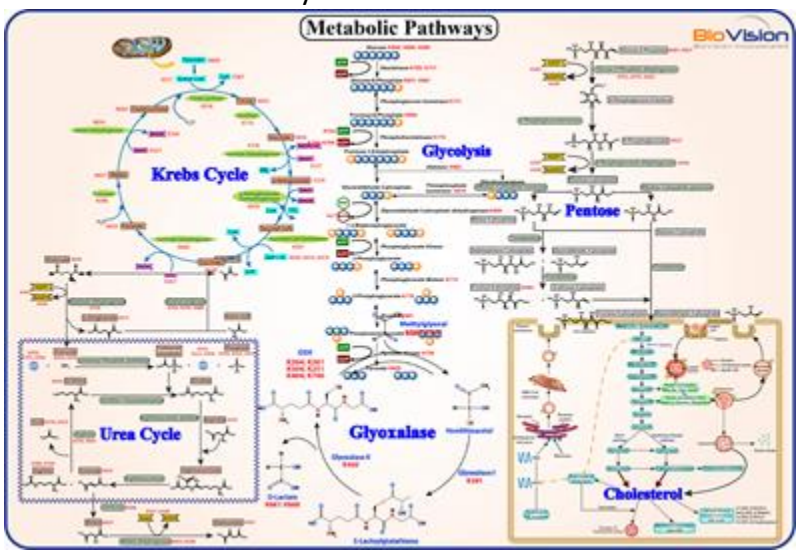

Image from: https://www.biovision.com/products/metabolism-assays.html (Links to an external site.)

5. Response to environment

    1. An organism can detect a change in the environment in the form of stimulus, with organism responding to specific stimulus.

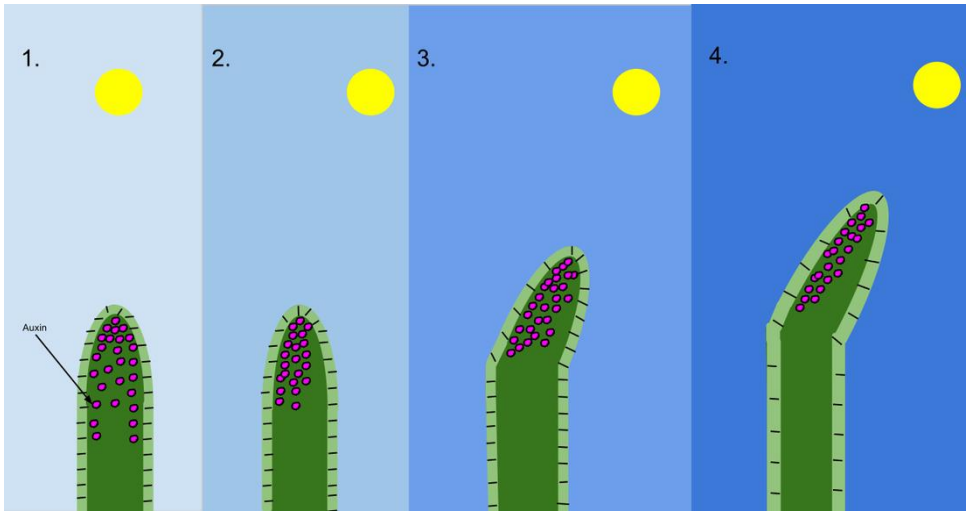

Image from: https://lifeofplantandanimal.weebly.com/response-to-stimuli.html (Links to an external site.)

6. Homeostasis
    1. An organism can control the internal environment of its body or cell to ensure constant conditions.

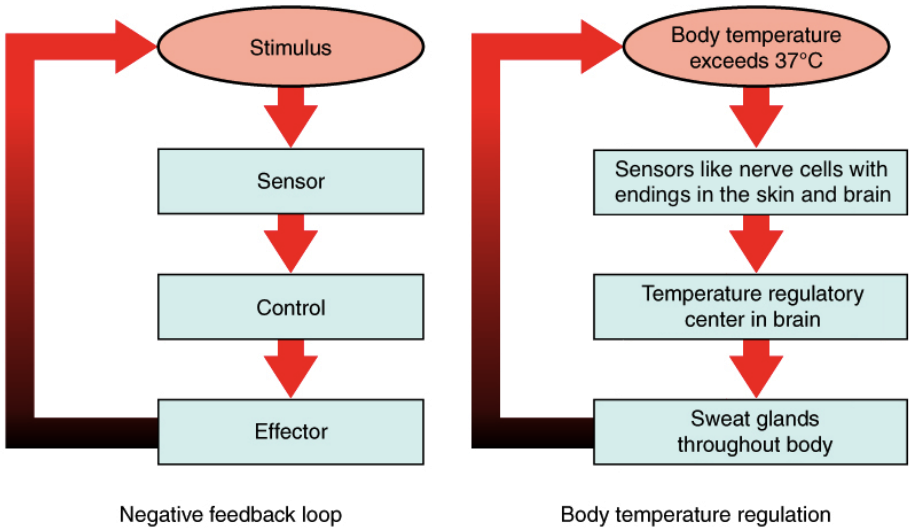

Image from: https://www.khanacademy.org/science/high-school-biology/hs-human-body-systems/hs-body-structure-and-homeostasis/a/homeostasis (Links to an external site.)

7. Evolution and Adaptation
    1. Each organism has adaptive that allow it to survive and reproduce in its natural environment.

2. Through natural selection, organisms with adaptive traits reproduce and survive better.

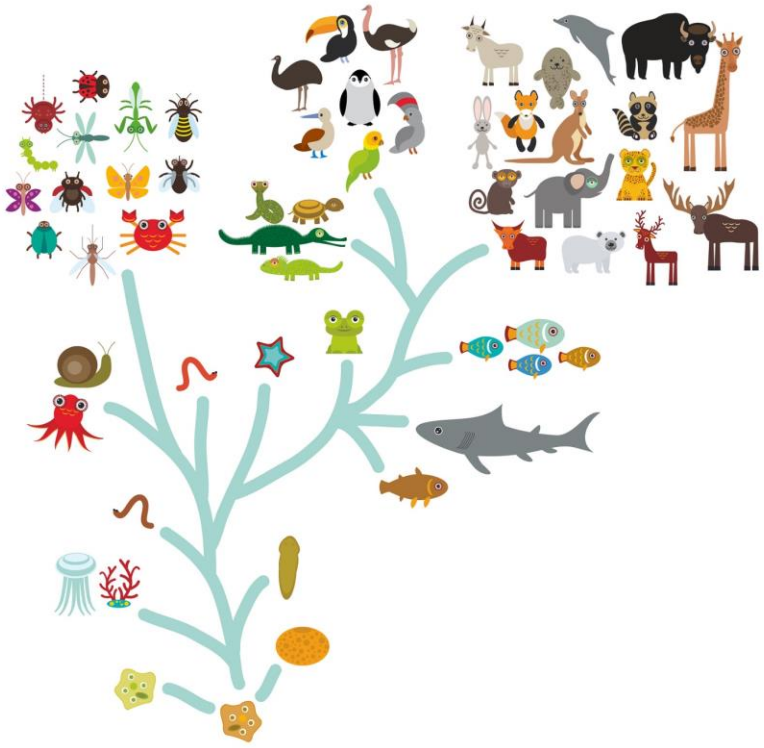

Image from: https://www.theschoolrun.com/what-are-adaptation-and-evolution (Links to an external site.)

Levels of Biological Organization

Life can be organized on many levels, and these organizations are ranked from the least complex to the most complex.

1. Molecule - chemical components of cells
2. Cell - the smallest unit of life
3. Tissue - a group of similar cells that perform the same function
4. Organ - structure with two or more tissues working together to perform a function
5. Organ systems - two or more organs working together to perform a certain action
6. Individual - a single organism
7. Population - an individual of the same species in an area
8. Community - all the species in an ecosystem that can interact
9. Ecosystem - a community and its physical environment
10. Biosphere - the part of the Earth that supports life

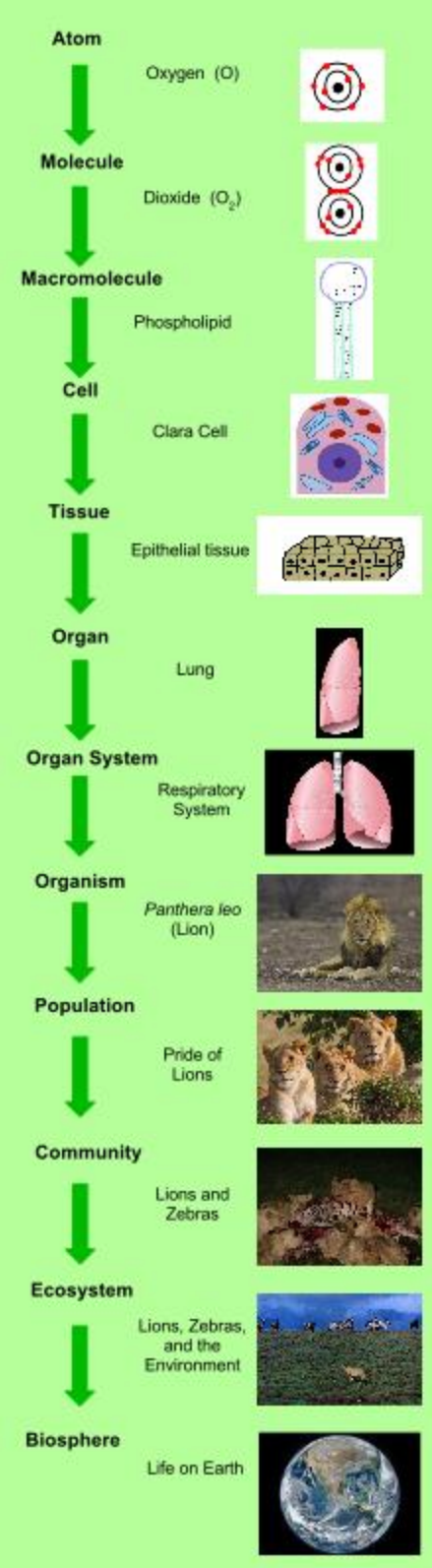

Image from: https://en.wikipedia.org/wiki/Biological_organisation

TERMINOLOGIES

Homeostasis – Maintenance of constant internal environment in the body
Natural Selection – differential survival and reproduction of individuals due to the differences in phenotype

FURTHER READINGS

James A. MacMahon, Donald L. Phillips, James V. Robinson, David J. Schimpf, Levels of Biological Organization: An Organism-Centered Approach, *BioScience*, Volume 28, Issue 11, November 1978, Pages 700–704, https://doi.org/10.2307/1307320

UNIT TASKS

Study Questions

- Structure a diagram that shows the appropriate levels of biological organization for the following components:
    - Humans
    - Oxygen
    - Mitochondria
    - Family
    - Nervous System
    - Water molecule
    - Nerve cell
    - Brain
    - Nervous Tissue
    - Carbohydrates
    - Town
    - River delta

REFERENCES

Goodenough, J. and McGuire, B. A. 2011. Human Biology. Majority of the modules are based on the book Biology of Humans (4th Edition): Concepts, Application, and Issues (pp. 1-13). Pearson