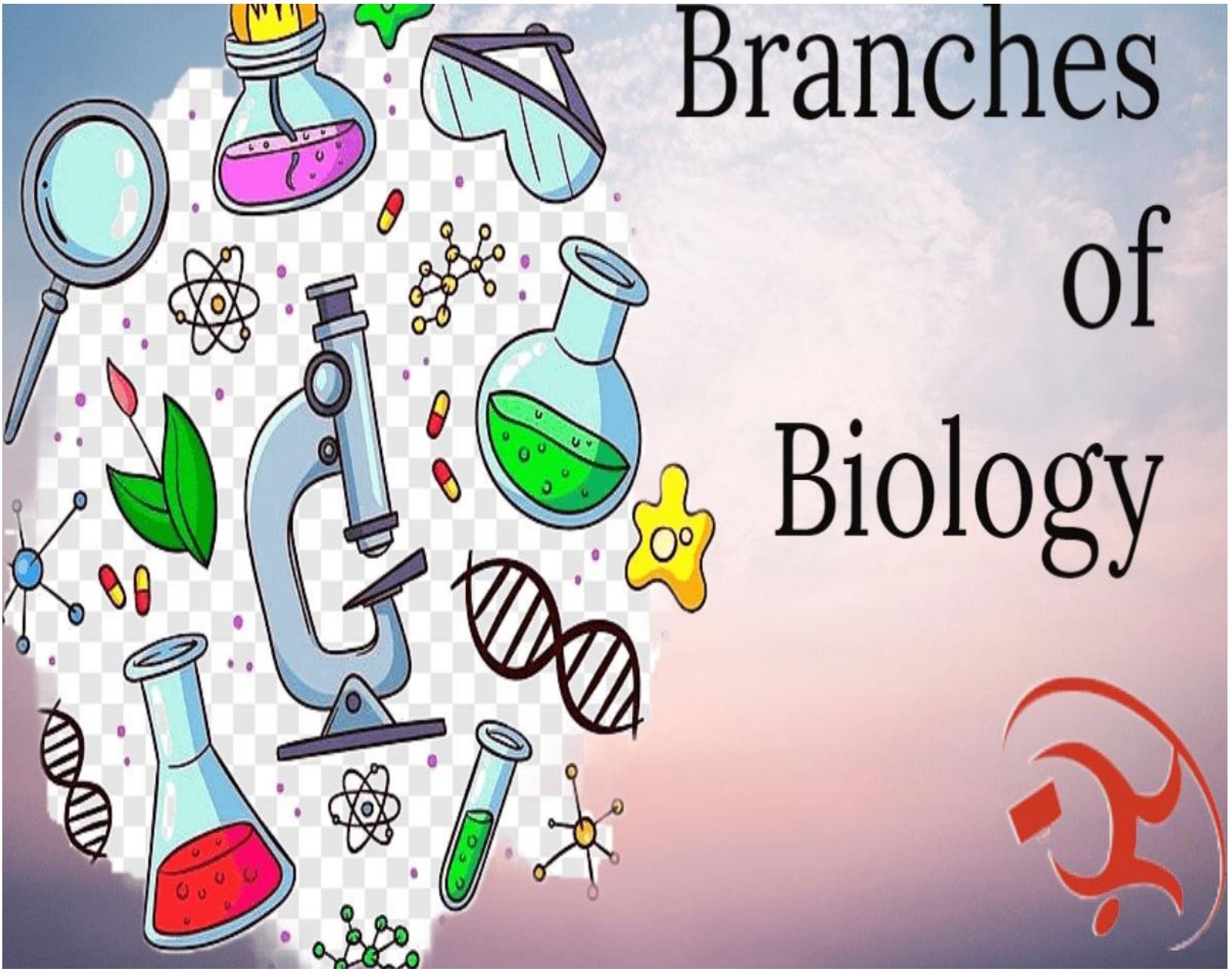
Unit 1:



1.1 Sub-fields of Biology

➢_The three major sub-divisions and their ares of concem are

A. Zoology

is concerned with all aspects of animal life, such as embryonic development to mature adulthood: behavior, such as interactions with other animals or food finding and genetics.
(zoology ስለ እንስሳት የሚያጠና ዘርፍ ሆኖ በውስጡም፦

⇨Herpetology (reptiles) ⇨Ichthyology (fish), ⇨Mammalogy (mammals), ⇨Omnithology (birds), and ⇨Entomology (insects). ይይዛል)

B. Botany

* is a field of biology that studies about plants..

* It deals with plants structure, properties, and biochemical processes.

C. Microbiology

* is the study of microscopic organs of microbes that cannot be seen by unaided eye. It includes bacteria, archaea, protists, viruses, microscopic algae and fungi.(mycology)

-

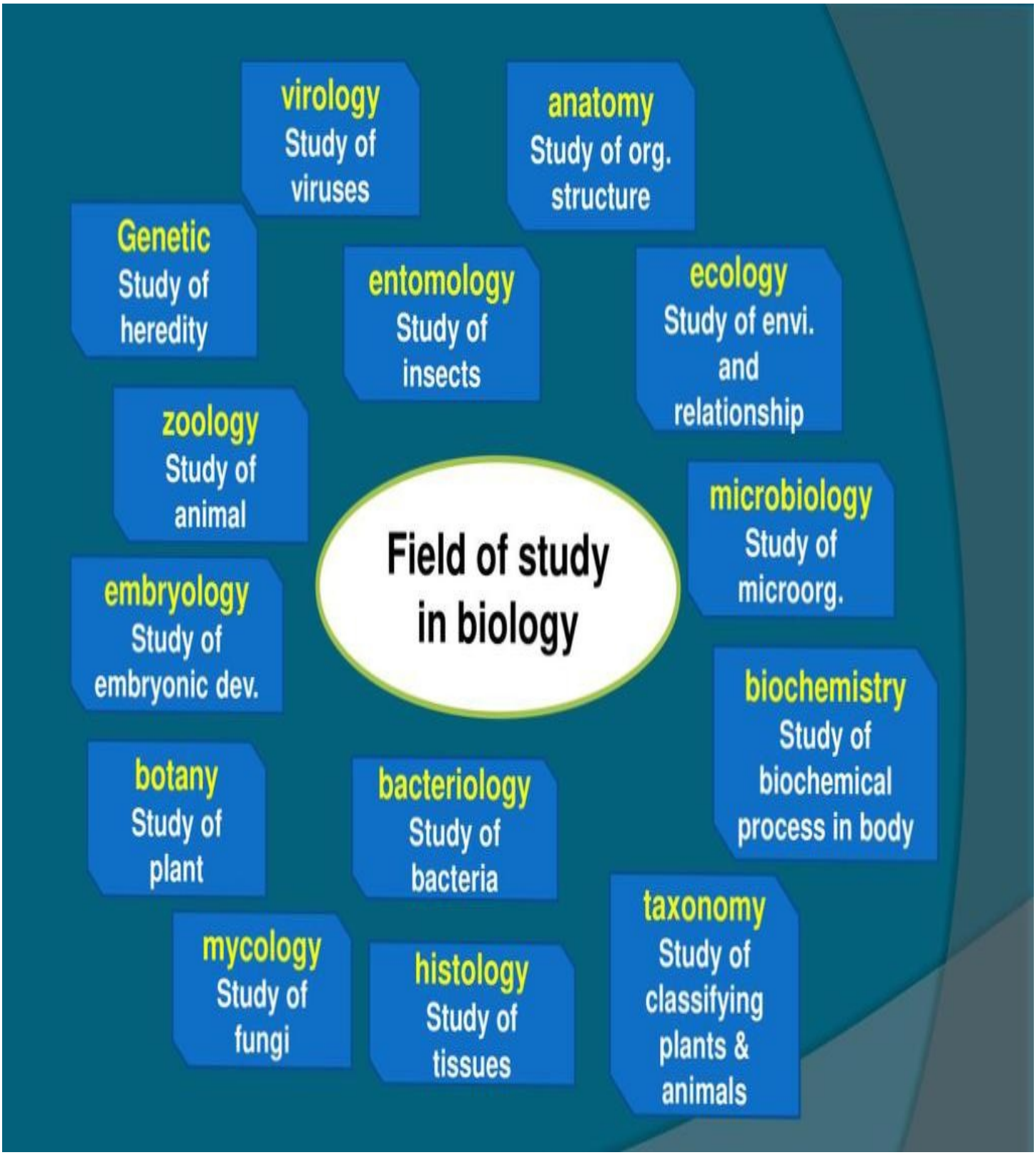

virology
Study of viruses
anatomy
Study of org. structure
Genetic
Study of heredity
entomology
Study of insects
ecology
Study of envi. and relationship
zoology
Study of animal
Field of study in biology
microbiology
Study of microorg.
embryology
Study of embryonic dev.
biochemistry
Study of biochemical process in body
botany
Study of plant
bacteriology
Study of bacteria
taxonomy
Study of classifying plants & animals
mycology
Study of fungi
histology
Study of tissues

Figure1.1 Subjects studied in various branches of Biology slide player

➢**NB**. There is some Knowledge taken from other subjects that help to explain biological phenomenen like:-

➠Call membrane➠Transportation of Oxygen

➠ Absorption of food/water ➠Release of energy during ruspiration (From chemistry)

➢Transportation of water in plants and so on from physivs

#Teacher's Mind

1.which one of the following part of zoology study about crocodile

A. Omnithology C..Herpetology

B. Entomology D. Mammalogy

#**Answer.D**.....(እንደተመለከታቹት ጥያቄዎች በዚህመልክ ስለሚዘጋጁ በየ Group ኡ ውስጥ የሚገኙ አንዳንድ እንስሳትን መያዝ ተገቢ ነው።)

➠ Matching Match the description of field of study given under Column A with the field of study given under column B,

Column "A"	**Column "B"**
1 The study of insect	A.Cytology
2.Embryological development of the fetus	B.Agroforestry
	C. Histology
3 The study of tissue	D. Entomology
4The study of mixed agriculture	E. Embryology
5 The study of cells	F. Taxonomy
6.study of classification	G. Oncology
7.study of cancer	H.Mychology
8.study of fungi	I. cardiology

 # Answer

- **1.D,** ➢ **5.A**
- **2.E** ➢ **6.F**
- **3.C** ➢ **7.G**
- **4.B** ➢ **8.H**

*cardiology ደግሞ study of heart ነው።

1.2 Pure and applied fields of biology

Pure ባዮሎጂ በተፈጥሮ ውስጥ ሕይወት እንዴት እንደሚሰራ (ባህሪዎች፣ የውስጥ እና ውጫዊ መዋቅር፣ መራባት፣ ወዘተ የሚያጠና ሲሆን Applied biology የሚባለው ደግሞ ይህን እውቀት ወደ ተግባር መለወጥ ነው። ከእነዚህ ተግባሪያዊ ማሳያዎች ለምሳሌ፦





fingerprints (unique patterns in DNA molecule). blood typing) to criminal and civil laws(የማንነት መለያ የሆኑ እነ DNA ን በመጠቀም የወንጀል ምርመራውን ማሳለጥ

1.3 Major discoveries that revolutionized biology

1. Aristotle (384-322 BC)

- ✓ classification system was known as the "**Ladder of Life** until the nineteenth century. For the first time, he **established species relationships and grouped** them correctly

2. Galen (129-161 AD)

- ✓ Among his important findings were the distinctions between **veins and arteries,** as well the recognition that the **larynx** produces voice.

3. Antonie van Leeuwenhoek (1632-1723)

- ✓ employed **microscopes** to learn more about the biological world;

among his findings were bacteria and the vacuole of the cell.

4. Carl Linnaeus (1707-1775)

- ✓ devised the method for **naming, ordering, and classifying** creatures that we still use today and further organized living things into classes, orders, genera, and species. "Hom sapiens, for example-"home" is the genus and sapiens is the species

5. Charles Darwin (1809-1882)

- ✓ He established that all species of life descended over time from common

ancestors, with species continuing to raid through the process of natural selection

1) Gregor Mendel (18... - 1884)

- His genetics laws were rediscovered at the turn of the 20th century and provided the mechanism for Darwin's theory of natural selection to occur. The two theories combine to form our current understanding of the evolutionary process.

2) Louis Pasteur (18... - 189...)

- Louis Pasteur is regarded as the **father of medical microbiology**. He pioneered molecular asymmetry research. He demonstrated that bacteria cause fermentation and disease. He developed **pasteurization**, named after him, which is used to kill unwanted bacteria in beer, wine and milk. He developed **anthrax and rabies vaccines**.

8. Robert Koch (1843-1910

- ✓ **father of modern bacteriology**, he is credited with pinpointing the precise causal agents of tuberculosis, cholers, and anthrax, as well as providing experimental **support** for the concept of **infectious disease**

9. Jane Goodall (1934)

- ✓ Our **knowledge of wildlife** and conservation has been transformed by Jane Goodall, the UK ethologist.

Best known for her career-long studies of chimpanzees, she discovered the animals are omnivores and tool users.

10) Barbara McClintock (1902-1992)

- ✓ American geneticist Barbara McClintock spent her career **analyzing maire**, where she developed a technique for identifying and

➢Additionaly: **Brown** discovered a consistent structurs present in a regular way, called "**nucleu**

➢ Then **Schleiden and Schwann** presented "**cell theory**" (1836-1840) Affer other Contributions, in 1884-1885, four scientists

➢(**Hertwig, Kolliker, Weismann** (all zoologists), and **Strasbarges** (botanist) derived that heredity matter existed in the nucleus in that material which makes up chromosome.

NB.➠.በየርዕሶቹ bold.የተደረጉት words and sentence በደንብ እዪአቸው ፈተና ላይ ብዙ ጊዜ የሚጠየቁት እነርሱ ናቸው እንጂ history part ኡ ወይ አ.ም አይደለም

መልዕክት ➢But don't always be a spectator of what people have done, contribute your own contribution, you should be classified as a history maker.

1.4 Ethiopian biologists and their contributions

1. Professor Yalemischay Mekonnen

✓ One of her research areas is the assessment of the impact of chemical pesticide hazards on humans

✓ She has done notable research on medicinal plants especially on Moringa

resistant to the parasitic Striga weed, which can destroy a big percentage of crop.

Review Questions

1.Match the the following two related column

1 Frederick Hopkins.	A. discovery of insulin
2 Galen.	B. X-.ray
3 Prof Gebissa Ejeta	C.circulation of blood
4 Schleiden and Schwan	D. germ theory
5 James Watson and Frands Crick	E.Vitamine
6 Louis Pasteur	F. veins and arteries
7 Wilhelm Roentgen	G sorghum
8 Frederick Bating	H cell theory
9 Robert Koch	I. structure of DNA,
10.William Harvey	J. modern bacteriology

2.Multiple Choice

1.First microscope was discovered

A. Zacharias Janssen C.Schleiden and Schwann

B. Frederick Bating D. William Beaumont

2.which on of the following is use of microscope in real life

A. medicine. C. Forensic Science

B.Ecosystem study D. All

3.The evolutionary history of an organism is known as

A. Anatomy C Falaeontology

B. Ancestry .D. Phylogeny

4. Bilharzia is caused by:

A. Snails C parasitic round worm

B. Bacteria D. Parasitic flatworms

5.who first discover digestive system

A. William Beaumont C. Keith Campbell

B G.Gabriel D unknown

Answer key

