

1. Who is credited for significant contributions to controlling schistosomiasis, particularly through the use of the soapberry plant, Endod (*Phytolacca dodecandra*)?
 - a. Dr. Tewolde Berhan Gebre Egziabher
 - b. Professor Tilahun Yilma
 - c. Dr. Aklilu Lemma
 - d. Dr. Melaku Worede
2. What did Dr. Tewolde Berhan Gebre Egziabher receive the Right Livelihood Award for in 2000?
 - a. Developing vaccines for cattle diseases
 - b. Safeguarding biodiversity and farmers' rights to genetic resources
 - c. Leading research in human health, including HIV/AIDS
 - d. Propagation of Ethiopia's indigenous trees
3. For what is Professor Tilahun Yilma internationally recognized, and what specific vaccine did he develop?
 - a. Control of schistosomiasis; Endod-based molluscicides
 - b. Safeguarding biodiversity; HIV/AIDS vaccine
 - c. Developing vaccines for cattle diseases; rinderpest vaccine
 - d. Plant breeding and genetics; drought-resistant sorghum
4. What is the primary focus of Dr. Melaku Worede's work in the field of biology?
 - a. Developing vaccines for cattle diseases
 - b. Safeguarding biodiversity and farmers' rights to genetic resources
 - c. Propagation of Ethiopia's indigenous trees
 - d. Preserving the genetic diversity of Ethiopia's domestic plants
5. Which Ethiopian biologist was awarded the World Food Prize in 2009 for developing drought-resistant sorghum varieties?
 - a. Professor Legesse Negash
 - b. Dr. Gebissa Ejeta
 - c. Professor Yalemtehay Mekonnen
 - d. Dr. Berhane Asfaw

6. What is Professor Yalemtehay Mekonnen's area of research, particularly focusing on chemical hazards?
 - a. Human physiology
 - b. Plant taxonomy
 - c. Food microbiology
 - d. Plant genetics and diversity

7. Who was involved in the discovery of a 3.3 million-year-old humanoid child fossil in 2006?
 - a. Dr. Zeresenay Alemseged
 - b. Dr. Tsehaynesh Meselle
 - c. Professor Ensermu Kelbessa
 - d. Dr. Berhane Asfaw

8. What is Dr. Gebissa Ejeta's specialization in the field of biology?
 - a. Plant breeding and genetics
 - b. Food microbiology
 - c. Human physiology
 - d. Plant taxonomy

9. What did Dr. Aklilu Lemma use to control the spread of schistosomiasis in his research?
 - a. Chemical molluscicide
 - b. Soapberry (Endod)
 - c. HIV/AIDS vaccine
 - d. Genetic engineering

10. Which institution is mentioned as a major center of biological research in Ethiopia and houses the Aklilu Lemma Institute of Pathobiology?
 - a. Haramaya University

- b. Mekelle University
 - c. Addis Ababa University (AAU)
 - d. Jimma University
11. Which Ethiopian institution was renamed in honor of Professor Aklilu Lemma and focuses on biomedical research and training in infectious diseases?
- a. Ethiopian Institute of Agricultural Research (EIAR)
 - b. Armauer Hansen Research Institute (AHRI)
 - c. Institute of Biodiversity Conservation (IBC)
 - d. Ethiopian Health and Nutrition Research Institute (EHNRI)
12. What role does the Ethiopian Institute of Agricultural Research (EIAR) play in improving agriculture in Ethiopia, and what are its main research areas?
- a. Improving livestock breeding and feeding programs
 - b. Research into the conservation of biodiversity
 - c. Enhancing soil fertility and water management
 - d. Studying infectious diseases like HIV/AIDS
13. In which institute do biologists work on research related to leprosy, tuberculosis, leishmaniasis, malaria, and HIV/AIDS?
- a. Ethiopian Institute of Agricultural Research (EIAR)
 - b. Armauer Hansen Research Institute (AHRI)
 - c. Institute of Biodiversity Conservation (IBC)
 - d. Ethiopian Health and Nutrition Research Institute (EHNRI)
14. What is the primary focus of the Institute of Biodiversity Conservation (IBC), and what are some of its current research areas?
- a. Improving crop technology and food security
 - b. Conservation of plant genes and biodiversity
 - c. Battling infectious diseases like TB and HIV/AIDS

d. Researching soil fertility and water management

15. Besides Addis Ababa University (AAU), name two other renowned universities in Ethiopia mentioned in the text that have active biology departments.

a. Mekelle University and Gonder University

b. Jimma University and Hawassa University

c. Haramaya University and Bahir Dar University

d. Gonder University and Bahir Dar University

16. What is the main purpose of using microscopes in biology?

- a. To magnify the size of living organisms
- b. To observe and study cells and their structures
- c. To enhance the color of biological specimens
- d. To visualize microscopic organisms without magnification

17. What is the function of stains in microscopy?

- a. To kill living cells for easier observation
- b. To enhance the color of dead cells
- c. To make specific cells or cell parts easier to see
- d. To preserve the natural state of cells on a slide

18. Which type of microscope uses a beam of electrons to form an image?

- a. Optical microscope
- b. Light microscope
- c. Electron microscope
- d. Magnifying microscope

19. What is the main limitation of the light microscope in terms of resolution?

- a. Limited magnification

- b. Inability to visualize living cells
- c. The resolving power and limit of resolution
- d. Restricted field of view

20. How is the overall magnification of a compound microscope calculated?

- a. By adding the magnification of the objective and eyepiece lenses
- b. By subtracting the magnification of the objective from the eyepiece lens
- c. By multiplying the magnification of the objective and eyepiece lenses
- d. By dividing the magnification of the objective by the eyepiece lens

21. What is one of the major advantages of using a light microscope?

- a. Ability to visualize three-dimensional shapes
- b. High magnification and resolution
- c. Capability to observe living cells directly
- d. Use in a vacuum for detailed imaging

22. Why is it important to stain specimens in microscopy?

- a. To enhance the color of dead cells
- b. To kill living cells for easier observation
- c. To make specific cells or cell parts easier to see
- d. To preserve the natural state of cells on a slide

23. Which type of microscope uses an electron beam to achieve high magnification?

- a. Optical microscope
- b. Light microscope
- c. Electron microscope
- d. Magnifying microscope

24. What is the main disadvantage of light microscopes regarding magnification?

- a. Limited magnification due to the wavelength of light
- b. Inability to visualize living cells
- c. Restricted field of view
- d. Requirement for a constant source of electricity

25. What is a significant limitation of electron microscopes?

- a. Limited resolving power
- b. Inability to magnify dead tissue
- c. Requirement for staining in vacuum
- d. Difficulty in handling and moving the microscope

26. Who designed one of the first working optical microscopes and observed cells in 1665?

- A. Theodore Schwann
- B. Robert Hooke
- C. Matthias Schleiden
- D. Anton van Leeuwenhoek

27. What is the function of the mitochondria in a cell?

- A. Control cell activities
- B. Carry out photosynthesis
- C. Release energy from food
- D. Form a barrier around the cell

28. Which of the following is a common characteristic of most living organisms?

- A. Selectively permeable membrane
- B. Presence of organelles
- C. Sensitivity to changes in surroundings
- D. Lack of genetic material

29. What is the primary function of the cell membrane?

- A. Synthesize proteins
- B. Control cell activities
- C. Release energy from food
- D. Regulate the passage of substances in and out of the cell

30. What is the term for the process by which living organisms obtain energy from their food?

- A. Reproduction
- B. Respiration
- C. Excretion
- D. Growth

31. Which organelle is known as the powerhouse of the cell and is responsible for cellular respiration?

- A. Nucleus
- B. Endoplasmic reticulum
- C. Mitochondria
- D. Ribosomes

32. What is a characteristic feature of plant cells but not typically found in animal cells?

- A. Mitochondria
- B. Cell wall
- C. Nucleus
- D. Endoplasmic reticulum

33. What type of cell division reduces the chromosome number and forms sex cells?

- A. Mitosis
- B. Meiosis
- C. Respiration
- D. Photosynthesis

Certainly! Here are some questions based on the information provided:

34. What are the three ways in which dissolved substances can move into and out of cells?

- A. Infiltration, ingestion, absorption
- B. Diffusion, osmosis, active transport
- C. Secretion, excretion, circulation
- D. Permeation, translocation, assimilation

35. How does diffusion occur, and what is the overall movement of particles in diffusion?

- A. Movement from low to high concentration; overall movement is towards high concentration
- B. Movement from high to low concentration; overall movement is towards low concentration
- C. Movement in both directions; overall movement is random
- D. Movement in a circular pattern; overall movement is circular

36. In the context of diffusion, what is concentration, and why does diffusion take place?

- A. Concentration is the number of organelles in a cell; diffusion takes place due to active transport
- B. Concentration is the amount of water in a solution; diffusion takes place due to gravitational forces
- C. Concentration is a measure of how much of a substance is in one place; diffusion takes place due to random movements of particles
- D. Concentration is the color of a solution; diffusion takes place due to magnetic forces

37. How is diffusion demonstrated in the described classroom activity (Activity 2.6)?

- A. Mixing different substances
- B. Moving boys and girls randomly
- C. Releasing a scented chemical
- D. Heating two beakers of water

38. What affects the rate of diffusion, and why is maintaining a steep concentration gradient important for diffusion?

- A. Temperature and color; it enhances visual effects
- B. Concentration and surface area; it increases the speed of diffusion
- C. Pressure and volume; it facilitates the movement of particles
- D. pH and viscosity; it prevents particles from clumping

39. What is the key characteristic of a partially permeable membrane, and how does it relate to osmosis?

- A. Allows all particles to pass through; osmosis is not affected
- B. Blocks the movement of water; osmosis is an active process
- C. Allows only certain particles to pass through; osmosis involves the movement of water
- D. Changes its permeability constantly; osmosis occurs in a reversible manner

40. What is the potential consequence for an animal cell placed in a hypotonic solution?

- A. Swelling and bursting
- B. Shrinking and shriveling
- C. Hardening and rigidity
- D. Plasmolysis and dehydration

41. Explain the significance of homeostasis in the context of osmosis in animal cells.

- A. Homeostasis prevents osmosis from occurring
- B. Homeostasis maintains constant internal conditions despite osmotic changes
- C. Homeostasis is unrelated to osmosis
- D. Homeostasis accelerates osmotic processes

42. How does osmosis affect red blood cells when placed in a hypertonic solution?

- A. They swell up and burst
- B. They remain unchanged
- C. They shrink and shrivel
- D. They become rigid and hard

43. Describe the role of turgor in plant cells and how it is achieved through osmosis.

- A. Turgor is achieved by water leaving the cells
- B. Turgor is a state of flaccidity in plant cells
- C. Turgor is rigidity maintained by water entering plant cells
- D. Turgor has no relation to osmosis in plant cells

44. What happens to a plant cell when it experiences plasmolysis?

- A. It becomes rigid
- B. It swells up
- C. It undergoes cell division
- D. It loses water and cytoplasm pulls away from the cell walls

45. How do freshwater fish regulate water intake to counteract the osmotic challenge of living in fresh water, and what role does active transport play in this process?

- A. Freshwater fish excrete concentrated urine to retain water, and active transport is involved in moving salts into their bodies.
- B. Freshwater fish excrete dilute urine to eliminate excess water, and active transport is used to move salts out of their bodies.
- C. Freshwater fish absorb water through their gills and use active transport to move salts against the concentration gradient out of their bodies.
- D. Freshwater fish absorb water through their gills and use active transport to move salts against the concentration gradient into their bodies.