COMBINED SCIENCE

TOPIC ONE

BIOLOGY

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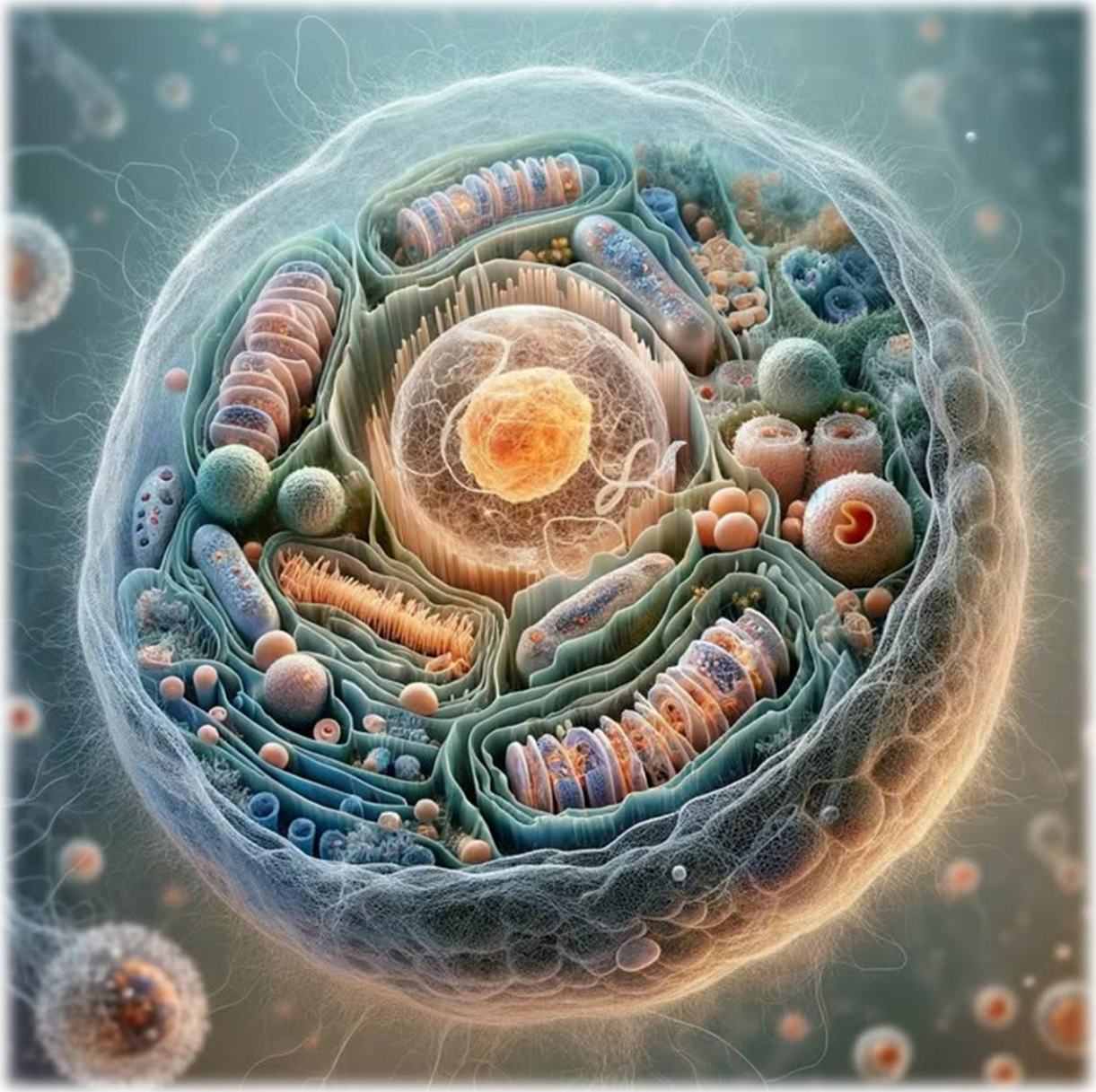

Structure and Function of a Cell

- Learners will study specialized cells—red blood cells, muscle cells, palisade cells, and root hair cells—focusing on their structures and functions.
- They will draw and label cells, observe prepared slides using microscopes and ICT tools, and relate structure to function. Visual aids and accessible tools support inclusive learning.

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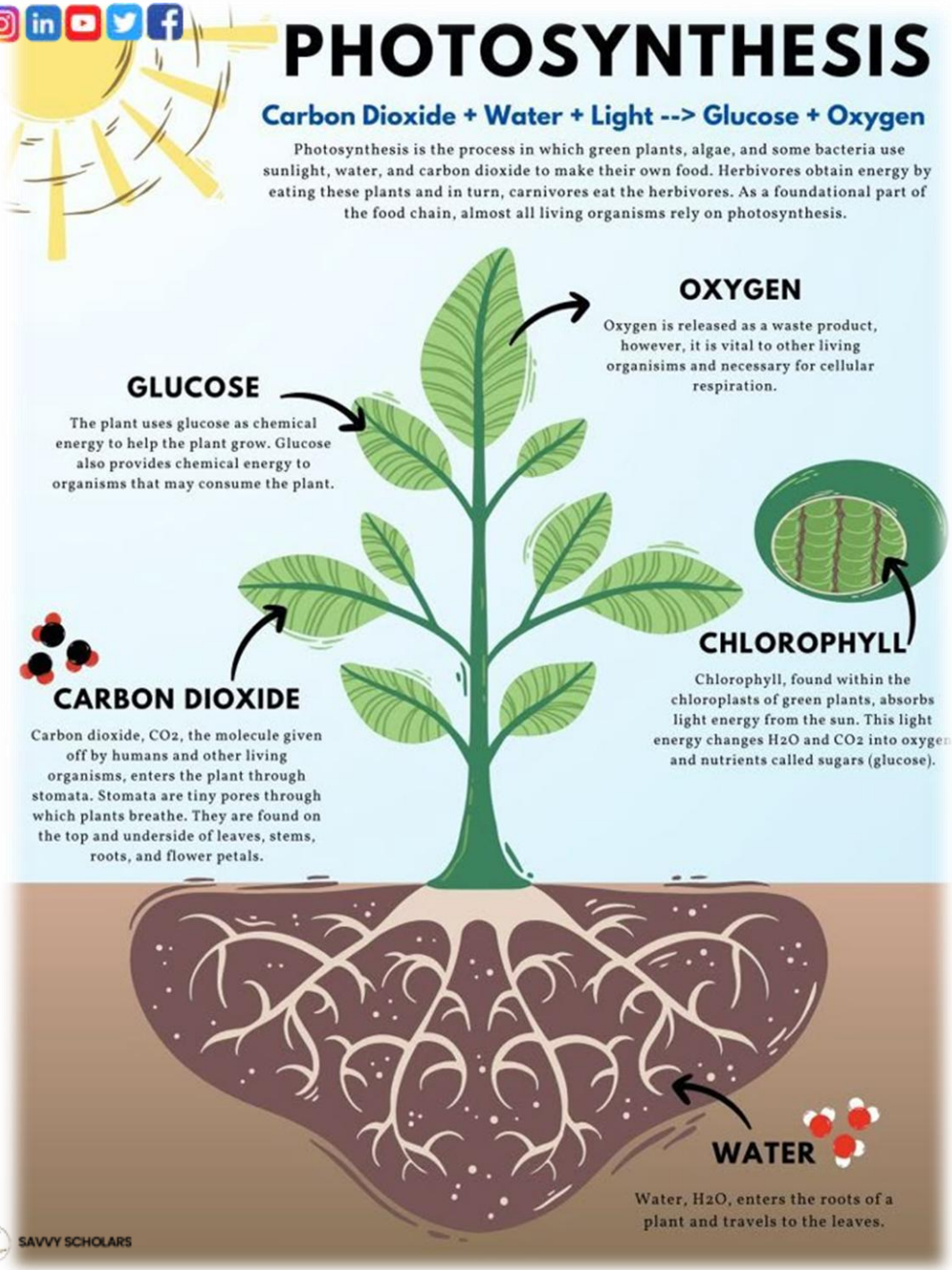
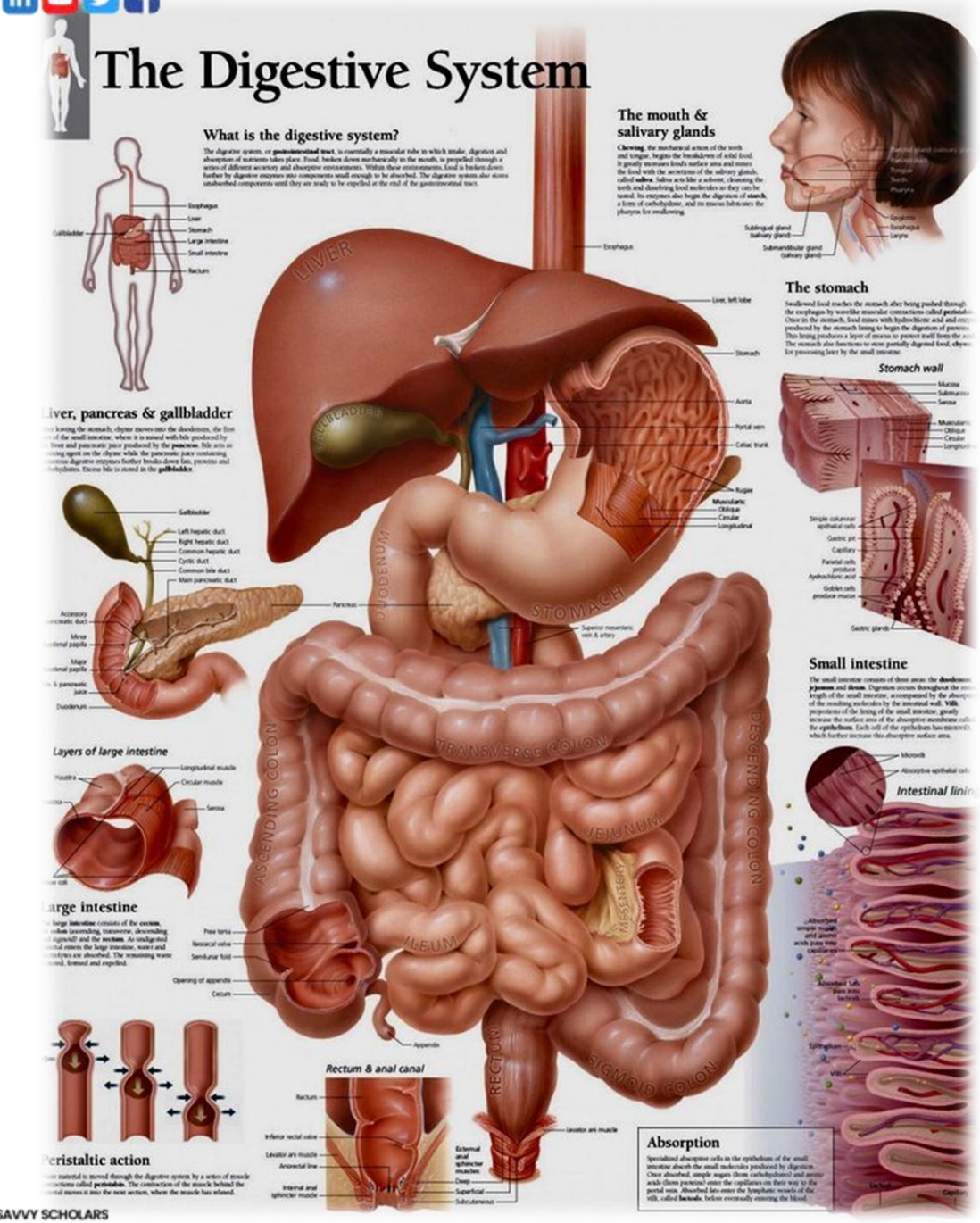
Nutrition – Photosynthesis



- Learners will explore factors affecting photosynthesis—light, water, carbon dioxide, and chlorophyll—through descriptions and experiments.
- They will test for starch and oxygen, examine leaf structures using microscopes, and understand the roles of carbohydrates and oxygen in plant processes. Resources include leaves, pondweed, light sources, and ICT tools.



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Human Nutrition

- Learners will study the human alimentary canal, its parts and functions, and types of teeth involved in mechanical digestion.
- They will explore mechanical and chemical digestion, enzyme functions, and food breakdown.
- Practical activities include using models, digestion simulations, enzyme experiments, and food tests for glucose, proteins, and fats.

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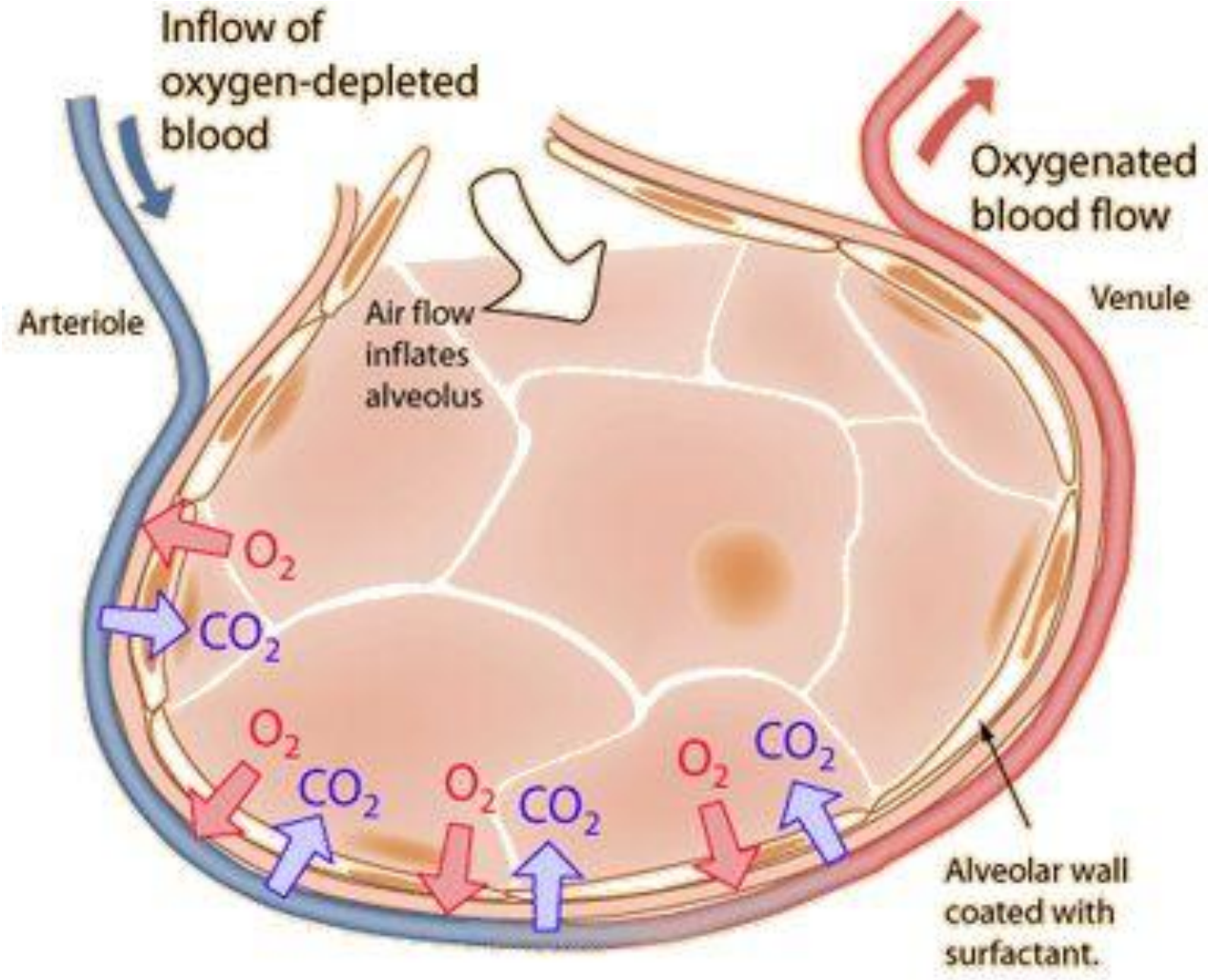
Respiratory Systems – Gaseous Exchange in Alveoli



- Learners will explore gaseous exchange in alveoli, comparing inhaled and exhaled air and explaining oxygen and carbon dioxide diffusion.
- They will examine alveolar adaptations for efficiency.
- Experiments using limewater or bicarbonate indicators will demonstrate air composition differences.

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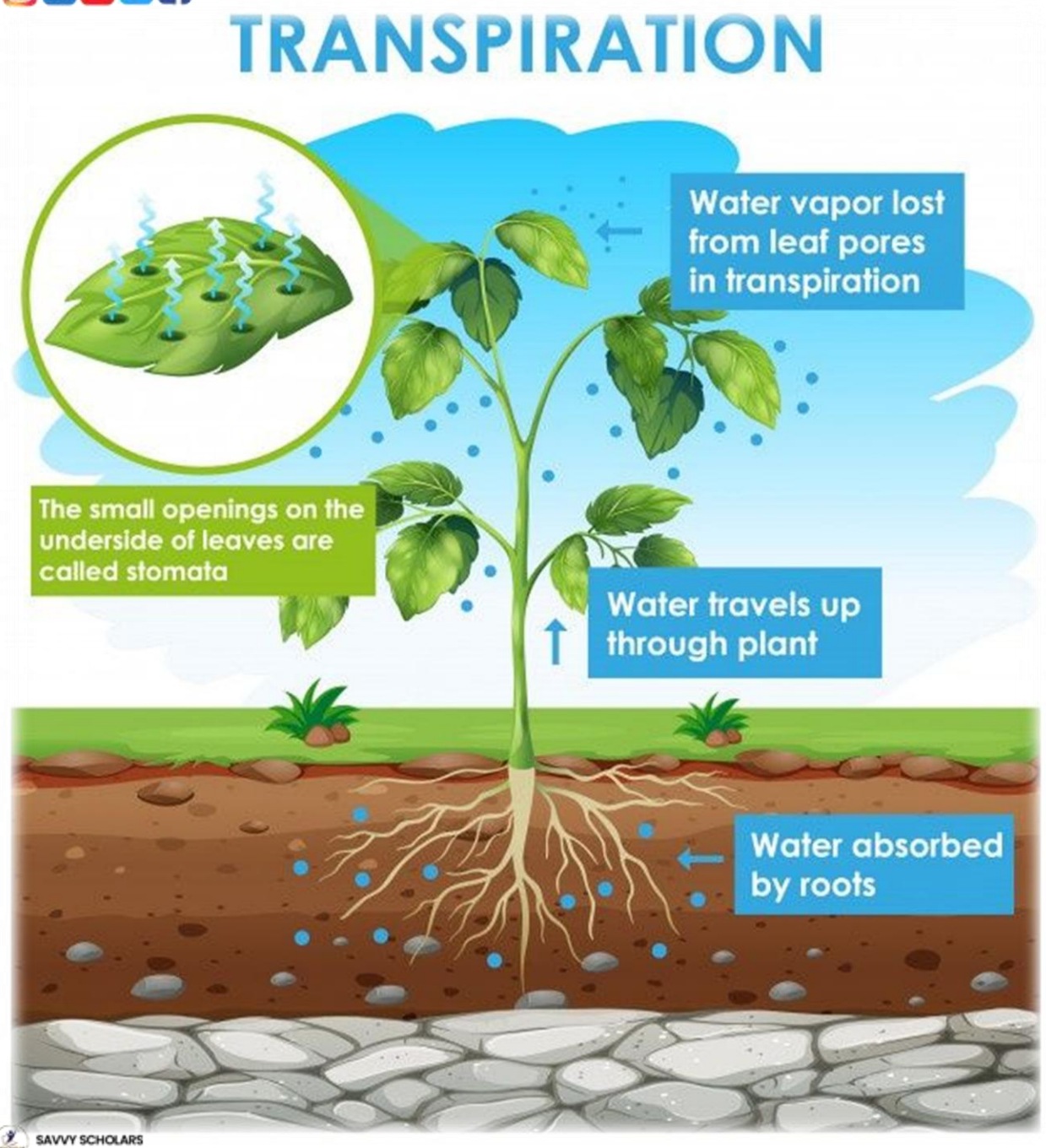

Transport Systems – Transpiration

- Learners will study transpiration in plants, its importance in water and mineral uptake, and cooling.
- They will identify factors affecting transpiration—wind speed, temperature, humidity, surface area, light intensity, and stomata.
- Using a potometer, students will measure transpiration rates, conduct experiments, and discuss its significance to plant health.

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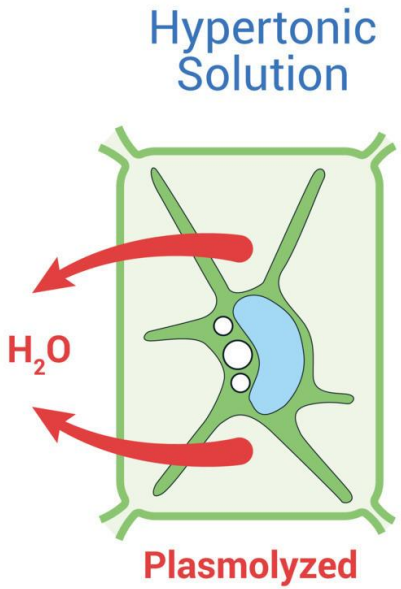

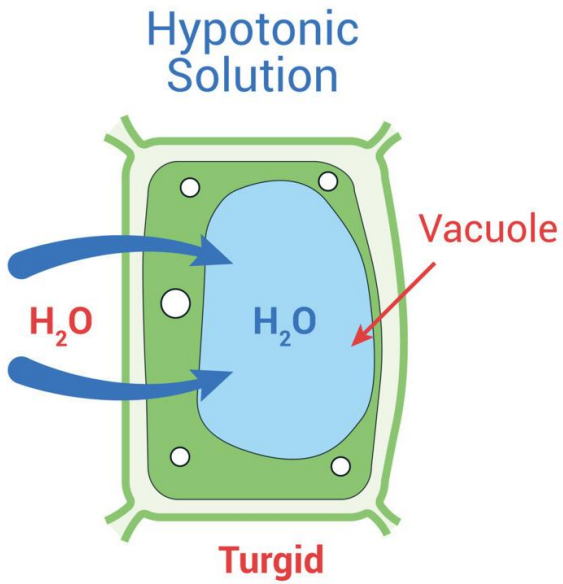

Plasmolysis and Turgidity

- Learners will define plasmolysis and turgidity and describe the effects of water loss and gain in plant cells.
- Through experiments using potato strips and visking tubing, they will observe the movement of water and the resulting changes in cell structure.
- Video simulations will also help in visualizing these concepts.

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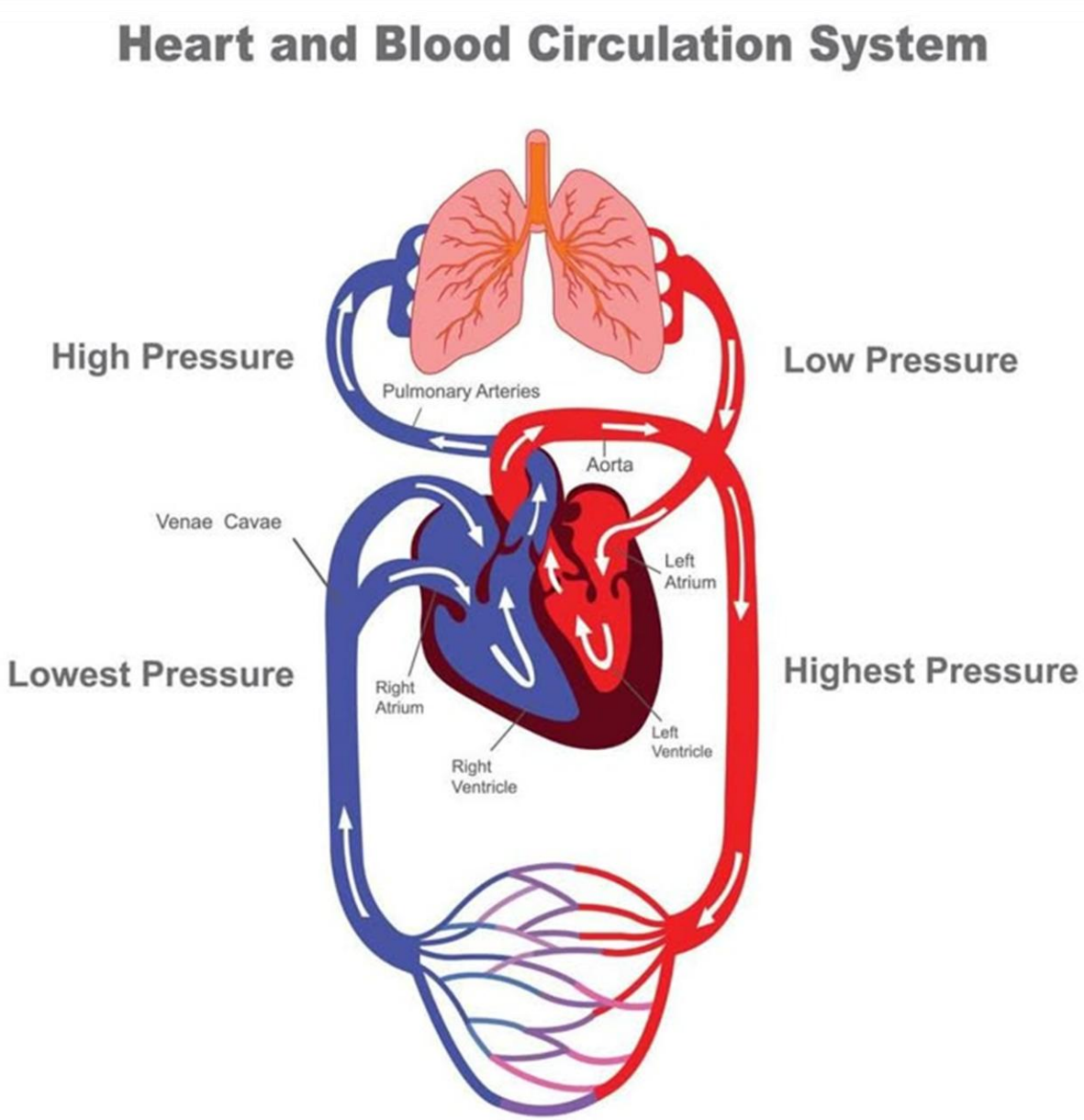
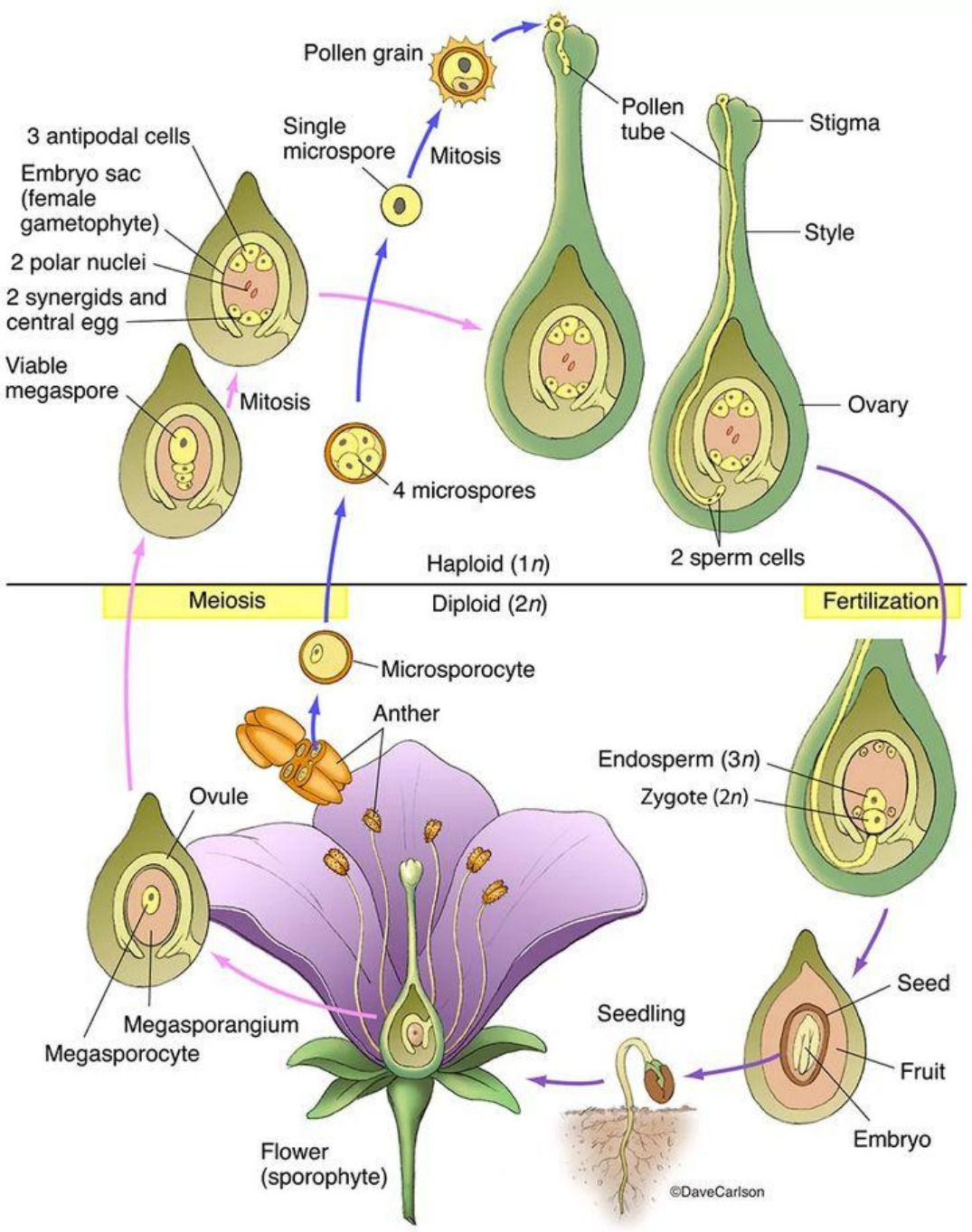


Blood Circulation

- Learners will study the human double circulatory system, understanding blood flow through the heart, lungs, and body, and the transport of oxygen and nutrients.
- Visual aids like video simulations and models will support learning.
- Inclusive access will be ensured through multimedia tools and assistive technologies



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REPRODUCTIVE SYSTEMS IN PLANTS

- Learners will study the reproductive systems in plants by exploring the structures of wind and insect pollinated flowers.
- They will examine, compare, and draw these flower types, identifying key adaptations for each pollination method. Practical activities and observations will enhance understanding of plant reproductive strategies.

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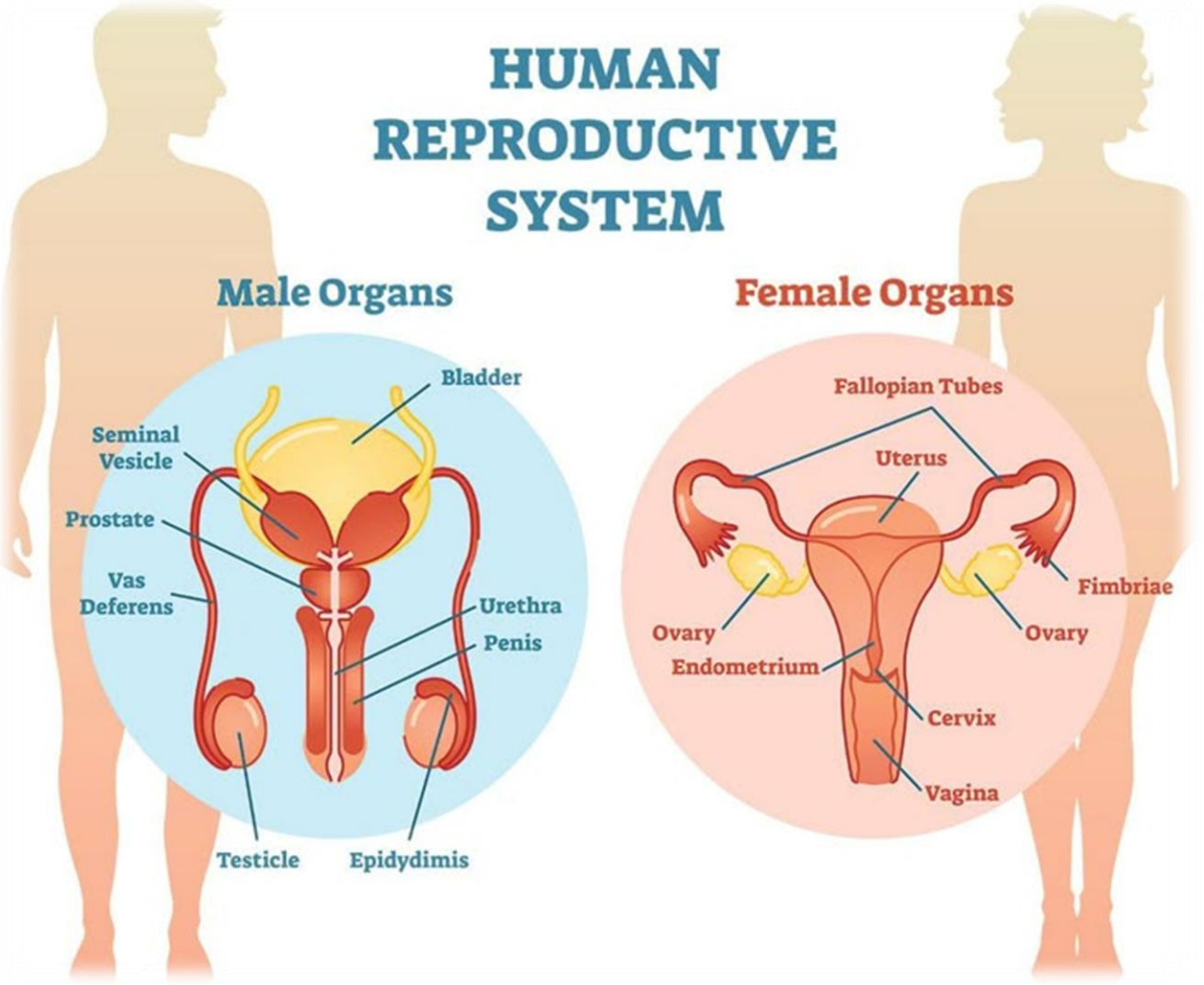

REPRODUCTIVE SYSTEMS IN HUMANS

- Learners will explore male and female reproductive systems, their structures, functions, and sex cells.
- They will draw reproductive organs and sex cells, trace the sperm’s path to the ovum, and define fertilization.
- The menstrual cycle, including hormones and ovulation, will be covered using models, multimedia, and inclusive ICT tools.

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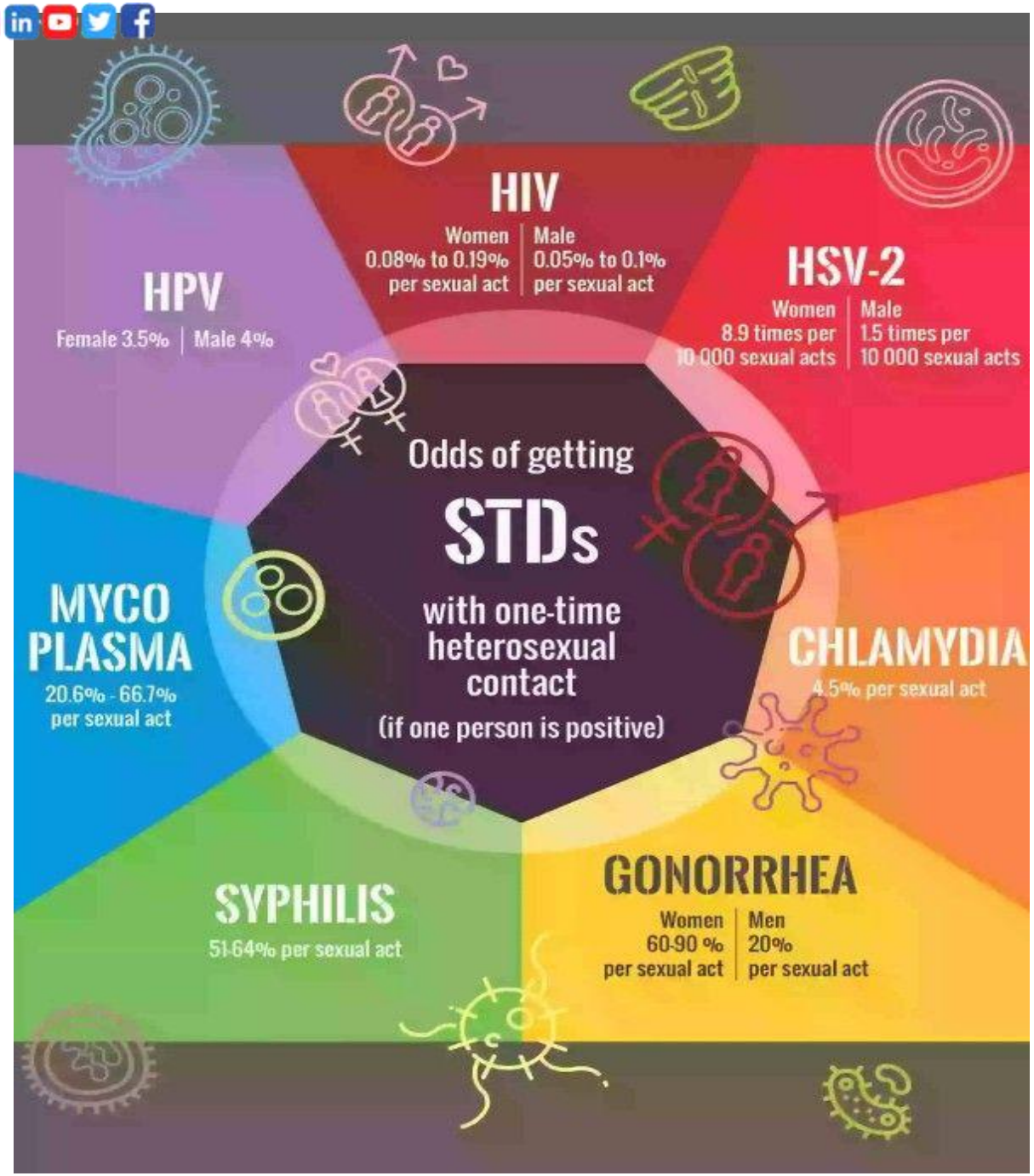
HEALTH AND DISEASES



- Learners will study sexually transmitted and communicable diseases, identifying causes, signs, symptoms, and treatments of STIs, malaria, typhoid, Ebola, and cholera.
- They'll explore disease prevention, effects of smoking, alcohol, mandrax, cannabis, and solvents.
- Learning is supported by discussions, videos, charts, print media, and inclusive ICT tools.