Year 9
Subject: Biology
Topic/Unit: Unit 2: Organisation
When: Spring Term

Huntington School
Learn and succeed

Overview: Why this? Why now?

This unit explores how cells, tissues, and organs work together to maintain life in humans and plants. Having mastered basic cell biology in Unit 1, students now apply that knowledge to complex systems, such as digestion and circulation. This unit is vital for understanding how lifestyle choices, like diet and smoking, directly affect physical health and lead to non-communicable diseases.

Building on...building to:
The unit builds on **KS3 knowledge** of the digestive system and **Unit 1 concepts** of osmosis, diffusion, and active transport. It provides the essential foundation for **Year 10 Bioenergetics**, specifically how plants and animals obtain and use the products of photosynthesis and respiration.

Sequence summary:
1. **Principles of Organisation:** Defining cells, tissues, organs, and organ systems.
2. **Human Digestion:** Identifying organs and the chemical breakdown of food.
3. **Enzymes:** Investigating catalysts, the 'lock and key' theory, and the effect of temperature and pH.
4. **Required Practicals:** Performing food tests for starch, sugars, proteins, and lipids, and investigating amylase activity.
5. **Circulation and Respiration:** Exploring the heart, blood vessels, lungs, and the four components of blood.
6. **Health and Disease:** Evaluating treatments for Coronary Heart Disease (CHD) and understanding cancer formation.
7. **Plant Transport:** Linking leaf and root structures to transpiration and translocation.

Key Vocabulary:
- **Enzyme:** A biological catalyst that speeds up reactions.
- **Denature:** When an enzyme's active site changes shape.
- **Ventricle:** A chamber of the heart that pumps blood out.
- **Transpiration:** The loss of water vapour from plant leaves.
- **Malignant:** A cancerous tumour that can spread.
- **Stent:** A metal mesh used to keep coronary arteries open.

Assessments:
Progress is monitored through **Required Practical lab reports** (Amylase and Food Tests), **multiple-choice plenaries**, and **mid-term tests** containing GCSE-style "PEQ" questions.
Able and interested: Higher-attaining students will evaluate the **ethical and economic implications** of artificial hearts versus transplants. They will also explore advanced physiology, such as the role of **potassium ions** in controlling guard cells.

Inclusion, Personal Development and Wider Skills:
Lessons link to **careers in Sports Science**. Personal development is supported by discussing the **financial and human costs** of non-communicable diseases on society. Literacy is supported through gap-fill booklets and structured comparison tables for benign and malignant tumours.

Homework and Independent Learning:
Students will complete a task set on the SPARX online platform. The task is based on the current topic but also includes consolidation on previous topics. It will automatically adjust the level of challenge as the student complete the activities.