



**CLASS X- SUBJECT:-BIOLOGY**

**CHAPTER: LIFE PROCESSES**

**Guidelines:**

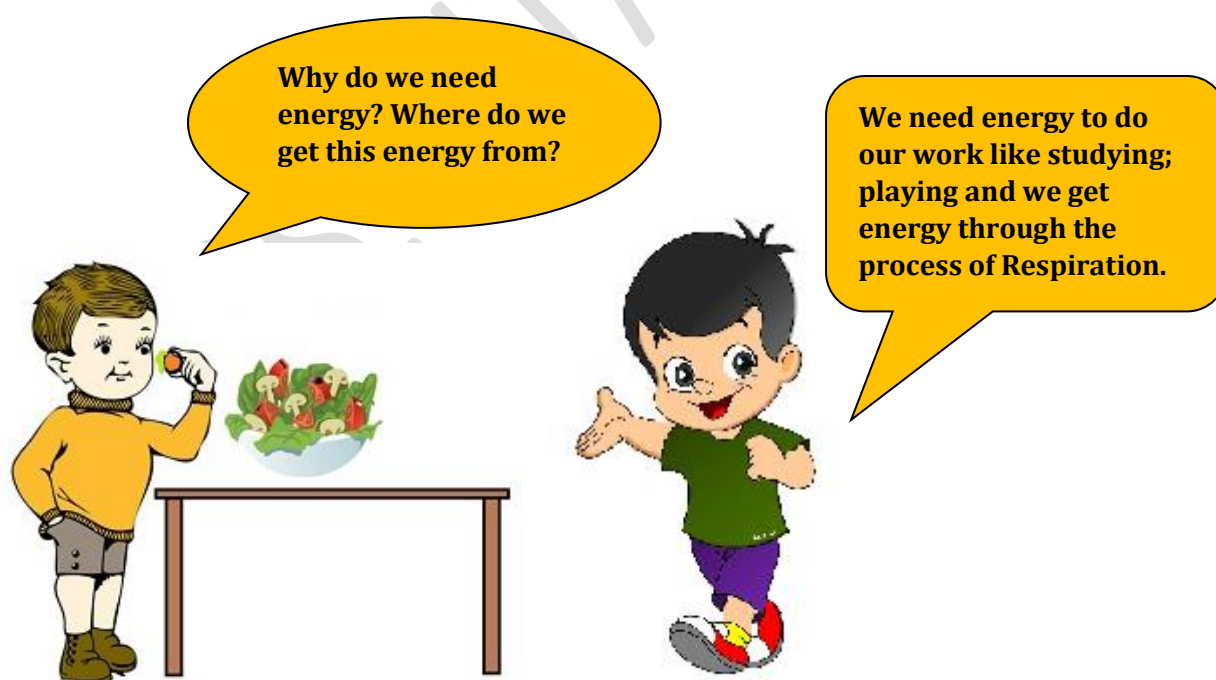
**Dear Students,**

- Refer to the following content of the chapter
- These notes will help you understand the concept of the lesson and complete the assignment that follows, which will be graded on submission.
- Do the assignment in the Biology notebook.
- Link for the Textbook:-  
[http://ncertbooks.prashanthellina.com/10\\_Science.html](http://ncertbooks.prashanthellina.com/10_Science.html)

**TOPIC: RESPIRATION**

**Breathing:** It is the process of gaseous exchange where oxygen is taken from the air and carbon dioxide is given out with the help of breathing organs.

**Respiration:** It is the process of breakdown of glucose either in the presence or absence of oxygen that occurs in the cells of our body.



Respiration is of two types- **aerobic** and **anaerobic** respiration

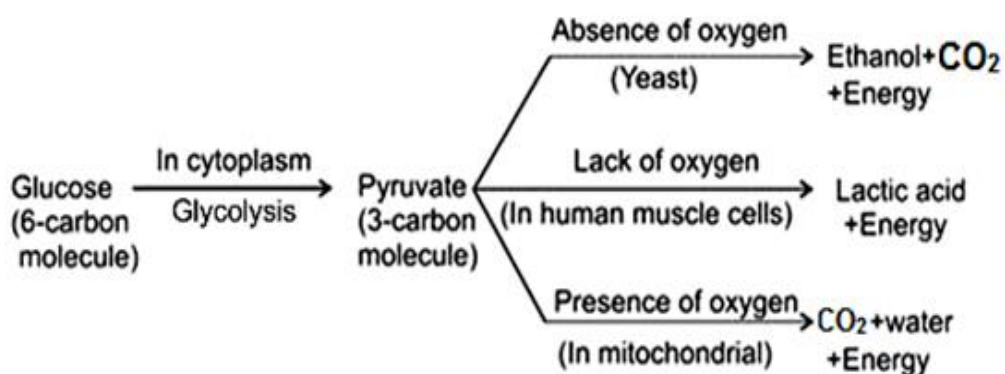
### Comparison chart between two types of Respiration

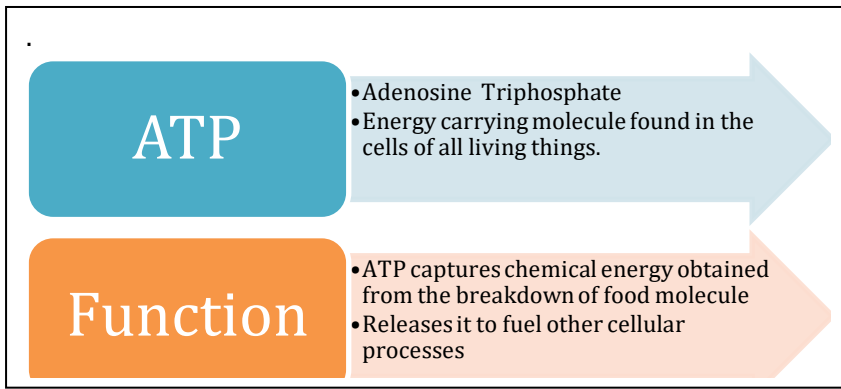
	Aerobic Respiration	Anaerobic Respiration
1.	Takes place in the presence of oxygen	Takes place in the absence of oxygen
2.	Energy is released in huge quantity	Energy is released in small quantity
3.	Occurs in cytoplasm and mitochondria	Occurs only in the cytoplasm
4.	Produces 36 ATP	Gives 2 ATPs
5.	First step : Breakdown of glucose (6Carbon) into pyruvate (3Carbon) in the cytoplasm	Glycolysis in cytoplasm , 2 pyruvate produced
6.	Second step: <b>Pyruvate</b> is broken down to <b>carbon dioxide</b> (1Carbon) and <b>water</b> in mitochondria	<ul style="list-style-type: none"> <li>• <b>Fermentation:</b> Breakdown of pyruvic acid into <b>ethanol</b> (2Carbon), <b>water</b> and energy in the presence of <b>yeast</b>.</li> <li>• <b>In muscle cells:</b> <b>lactic acid</b> and energy are produced</li> </ul>
	E.g.: Human beings, plants	E.g.: Occurs in Yeast (Fermenter) and human muscle cells

Kindly refer to the link shared below for better understanding of the process of respiration and its types. It will enable you to experience the process visually.

<https://www.youtube.com/watch?v=HZtXLhm7ISA>

### Flow Chart Showing Breakdown of Glucose by both Aerobic and Anaerobic Pathways



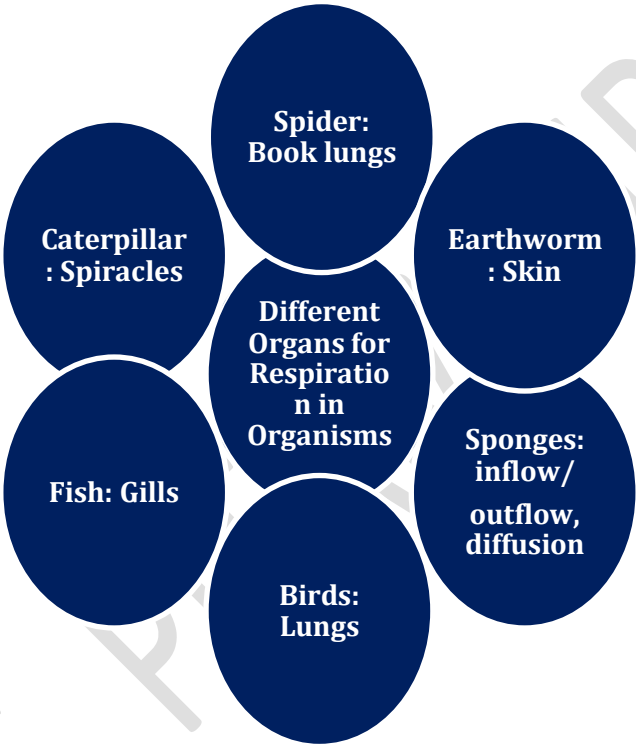


What is ATP? What is its function?

Do all organisms have same respiratory system? If not, what are the different organs for respiration in different organisms?

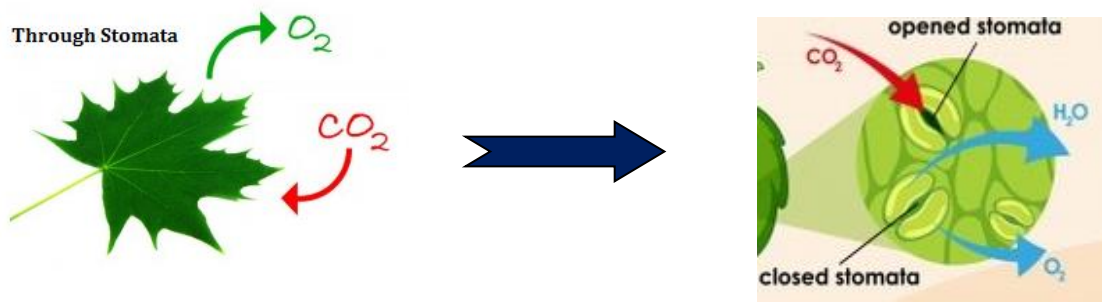
Yes, different organisms have different organs for breathing. Have a look at some of these...

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### How do Plants breathe?

- Plants take in oxygen for respiration and give out carbon dioxide.
- Plants do not have any specialized structures for gaseous exchange but they have **stomata** (present in leaves) and **lenticels** (present in stems) which are involved in the exchange of gases. Plant roots, stems, and leaves respire at a very slow rate.
- Plants respire throughout their lifespan to get energy for their survival, but plants do not breathe as humans and animals do. They breathe through the process called Cellular Respiration.
- In this process of cellular respiration, plants produce glucose molecules through photosynthesis by capturing the solar energy and converting it into glucose.
- The oxygen, taken in through stomata, is used by cells in the leaves to break down glucose into carbon dioxide and water.



### Comparison between Photosynthesis and Respiration

	Photosynthesis	Respiration
1.	Food is synthesised	Food is oxidised
2.	It uses and stores energy	It releases energy
3.	It is an anabolic process	It is a catabolic process
4.	It takes place only in the presence of light	It occurs throughout the life cycle
5.	Occurs in plants	Occurs in plants, animals, microbes

Keywords:

Respiration	Aerobic	Anaerobic	Fermentation	Stomata
Breathing	Pyruvate	Catabolic	Anabolic	Lenticels

### ASSIGNMENT

- Q1. Name the end products of glucose breakdown in aerobic and anaerobic respiration.
- Q2. Define fermentation.
- Q3. Aerobic respiration is more efficient in terms of energy as compared to anaerobic respiration. Justify.
- Q4. When does anaerobic respiration take place in humans? Elaborate.
- Q5. Why do humans need energy? (At least 3 points)