

## Modelling Interactions

### Learning Outcomes in Focus

#### Contextual strand: BW 4

Students should be able to **describe** the structure, functions and interactions of the organs of the human digestive, circulatory and respiratory systems.

**DESCRIBE:** Develop a detailed picture or image of, for example, a structure or process; using words or diagrams where appropriate; produce a plan, simulation or model.

#### Nature of science: NoS 1

Students should be able to appreciate how scientists work and how scientific ideas are modified over time.

### Learning Intentions

Students will learn to:

1. Describe the interactions of the respiratory, digestive and circulatory systems through the development of a scientific model.

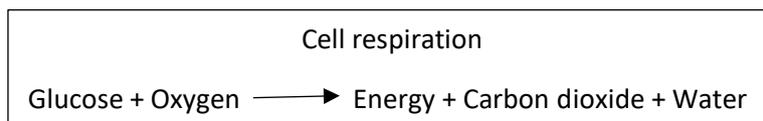
### Prior Learning

Students can describe the structure and functioning of each of the three systems and can describe respiration as a chemical and biological process.

## Student Activity Sheet

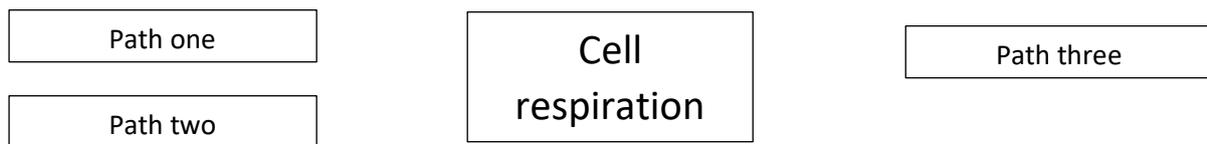
Scientists often develop models to explain how things work. A *scientific model* can be a diagram or a drawing or some other representation which helps to explain a process. On completing this activity, you will have developed a model to explain how some of your bodily systems work together.

1. Place the card representing cell respiration on the floor or on a large table.



2. Show the path of carbohydrates from the mouth to the cell using all the cards numbered 1. (Path one)
3. Show the path of oxygen from the mouth/nose to the cell using all the cards numbered 2. (Path two)
4. Show how carbon dioxide and water are eliminated from the body using all the cards numbered 3. (Path three).

You will end up with a structure similar to that shown below.



The structure represents how the digestive system, circulatory system and respiratory system work together to allow cell respiration to happen. However, this model shows more than one heart and more than one representation of the organs of the respiratory system. On the sheet of paper, provided develop a more appropriate model using words and/or diagrams which shows clearly how the three systems work together to facilitate cell respiration.

### Possible Extension activity

Can you indicate on your diagram/ model where other systems you know of might also contribute to this process? Some systems you might consider are the skeletal system, the nervous system and the muscular system.

**Cell respiration**



Set 1: Cut up and put number 1 on the back of all the following:

<b>STOMACH</b>	<b>HEART</b>
<b>SMALL INTESTINE</b>	<b>BLOOD IN ARTERIES</b>
<b>MOUTH</b>	<b>OESOPHAGUS</b>
<b>CAPILLARIES</b>	<b>CAPILLARIES</b>
<b>BLOOD IN VEINS</b>	

Set 2: Cut out and put number 2 on the back of all the following:

<b>HEART</b>	<b>BRONCHUS</b>
<b>CAPILLARIES</b>	<b>MOUTH/NOSE</b>
<b>BRONCHIOLES</b>	<b>BLOOD IN ARTERIES</b>
<b>TRACHEA</b>	<b>ALVEOLI</b>
<b>CAPILLARIES</b>	<b>BLOOD IN PULMONARY VEIN</b>

SET 3: Cut out and put number 3 on the back of all the following:

<b>BRONCHUS</b>	<b>BLOOD IN VEINS</b>
<b>HEART</b>	<b>BRONCHIOLES</b>
<b>TRACHEA</b>	<b>MOUTH/NOSE</b>
<b>BLOOD IN PULMONARY ARTERY</b>	<b>ALVEOLI</b>
<b>CAPILLARIES</b>	<b>CAPILLARIES</b>