**Science (S1-3)**

**Updated Curriculum (2017)**

**Unit 4: Cells, Human Reproduction and Heredity**

**DNA and Heredity**

**Compiling a “Café Staff Handbook”**

**(Student’s version)**

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**Science (S1-3)**

**Unit 4: Cells, Human Reproduction and Heredity**

**Topic: DNA and Heredity**

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**【Learning Objectives】**

After this learning activity, students should be able to:

1. recognise what gene, DNA and chromosome are and understand the relationship between them;
2. recognise that DNA encodes the instructions that determine our different traits; and
3. recognise that different cell types in an individual possess the same genetic materials
4. **Concept Revision – Basic structures and functions of animal cells**

A photomicrograph of human cheek cells is shown as below:



A

B

C

[Human cheek cells stained by methylene blue](https://www.flickr.com/photos/codonaug/6936088770/in/faves-11239497%40N06/) by [Joseph Elsbernd](https://www.flickr.com/photos/codonaug/), used under [CC BY 2.0](https://creativecommons.org/licenses/by-nc/2.0/)

Label structures A, B and C. Write down one function of each structure respectively.

|  |  |  |
| --- | --- | --- |
| Structure | Name | Function |
| A |  |  |
| B |  |  |
| C |  |  |

1. **Relationship between gene, DNA and chromosome**

**Activity 1 :**  **Working procedures of different departments and the staff handbook of a Café**

 **Activity 2 : The dress code and daily routine for the staff working in different departments of a**

 **Café**

**Complete the table below after the activities:**

|  |  |  |
| --- | --- | --- |
| **Activity** | **Represent** | **Introduction** |
| The paper strip with a working procedure of a department in a Café printed on it | ( ) | * ( ) is a segment of DNA which carries an ( ).
 |
| The connected paper strips from whole group/class | ( ) | * DNA is a long-chain chemical. DNA carries many ( ).
 |
| The booklet complied from a cover page and pieces of paper with strips of working procedures sticking onto it  | ( ) | * A chromosome is ( )

folded together with other chemical substances.* Each human cell (except sperms and eggs) carries ( ) pairs of chromosomes.
 |
| Each student has the same staff handbook but each of them is allowed to read and carry out the instruction on a specific page only  | Different types of cell of an individual carry the same genetic materials but each cell can only carry out some specific instructions on the DNA. | * Different types of cell of an individual carry the ( ) genetic materials.
* As each cell can only carry out some specific instructions, different cells hence have different ( ) and ( ) .
 |



**The relationship between DNA and Chromosomes**