**Type of nucleus**

The word nucleus is used to describe both part of an atom and part of a cell.

*Fill in the gaps to complete the sentences.*

*You should only use the words* ***atomic*** *and* ***cell.***

A/An \_\_\_\_\_\_ nucleus contains DNA (genetic material).

A/An \_\_\_\_\_ nucleus is made up of protons and neutrons only.

A/An \_\_\_\_\_\_ nucleus is surrounded by cytoplasm.

A/An \_\_\_\_\_ nucleus cannot be seen through even a very powerful microscope.

A/An \_\_\_\_\_nucleus is much smaller than a/an \_\_\_\_\_\_ nucleus.

*Chemistry > Big idea CPS: Particles and structure > Topic CPS6: Periodic Table > Key concept CPS6.1: Atomic model*

|  |
| --- |
| **Response activity** |
| **Type of nucleus** |

**Overview**

|  |  |
| --- | --- |
| Learning objective: | The structure of an atom may be represented by an atomic model. |
| Observable learning outcome: | Distinguish the nucleus of an atom from the nucleus of a cell. |
| Activity type: | Focused cloze |
| Key words: | atom, cell, nucleus |

This activity can help develop students’ understanding by addressing the misunderstandings revealed by the following diagnostic question:

* Nucleus

**What does the research say?**

A research study (Harrison and Treagust, 1996) interviewed students about their mental models of atoms. A surprising finding was that a small number of students considered an atom to be alive and even thought that an atom could reproduce. It was thought that this substantial misunderstanding may have arisen from confusion when the term nucleus was introduced as forming part of the structure of an atom. Students may have applied previous understanding about the role of the nucleus in a cell.

**Ways to use this activity**

Students should complete the activity individually as a pencil and paper exercise.

How students fill in the gaps will show you whether they understood the concept sufficiently well to apply it correctly.

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs.

*Differentiation*

You may choose to read the sentences to the class, so that everyone can focus on the science. In some situations, it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

A **cell** nucleus contains DNA (genetic material).

An **atomic** nucleus is made up of protons and neutrons only.

A **cell** nucleus is surrounded by cytoplasm.

An **atomic** nucleus cannot be seen through even a very powerful microscope.

An **atomic** nucleus is much smaller than a **cell** nucleus.

**Acknowledgments**

Developed by Helen Harden (UYSEG).

Images: None

**References**

Harrison, A. G. and Treagust, D. F. (1996). Secondary students' mental models of atoms and moelcules: Implications for teaching chemistry. *Science Education,* 80(5)**,** 509-534.