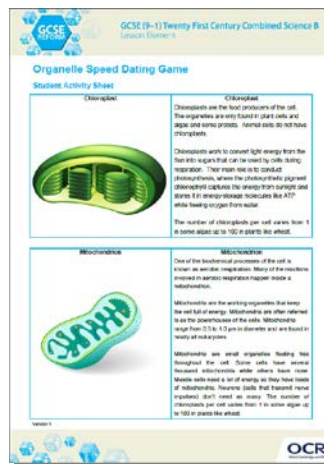




# Organelle Speed Dating Game

## Instructions and answers for teachers

These instructions should accompany the OCR resources GCSE (9–1) Combined Science 21<sup>st</sup> Century Science B ‘Organelle Speed Dating Game’ learner activity which supports OCR GCSE (9–1) Combined Science 21<sup>st</sup> Century Science B.



### Introduction

The goals of this activity are to:

- introduce students to the range of organelles present in eukaryotic and prokaryotic cells
- stimulate discussion about the location and function of key organelles within these types of cells

The activity can be run as a general Speed Date.

Speed Date involves all students simultaneously interacting and will quickly produce results for assessment for learning activities including peer assessment during the activity and the true/false quiz worksheet as a follow-on activity.



*This activity offers an opportunity for English skills development.*

### Associated materials

Student worksheet Organelle Speed Dating Game



*This resource is an exemplar of the types of materials that will be provided to assist in the teaching of the new qualifications being developed for first teaching in 2016. It can be used to teach existing qualifications but may be updated in the future to reflect changes in the new qualifications. Please check the OCR website for updates and additional resources being released. We would welcome your feedback so please get in touch.*





## Notes for teachers

The topic background is **Sub-topic B1.1 What is the genome and what does it do?**

Prior knowledge: Learners have been taught at KS3 the general cellular structure of plant and animal cells. They should also have a simple understanding about the genetic information in cells. This activity could form the introduction to an awareness of key organelles in cells and the specification content:

*‘Explain how the nucleus and genetic material of eukaryotic cells (plants and animals) and the genetic material, including plasmids, of prokaryotic cells are related to cell functions.’*

It will also support the learners when looking more at sub-cellular organelles, covered in **Sub-topic B4.2 How do we know about mitochondria and other cell structures?**

Common learner misconceptions or difficulties with this topic include:

- Genetic terms are often confused. Learners particularly struggle with the difference between a chromosome, gene and allele. They often use the terms gene and allele interchangeably. Being consistent when using these terms when teaching will hopefully help learners with their understanding in addition to revisiting key terminology on a regular basis with games like Speed Date.
- Learners often confuse processes that occur within the nucleus and those that occur outside the nucleus. This is, in part, is due to them being unclear of the position of key organelles where such processes occur.

## Task Instructions

The 14 size game cards need to be printed out and ideally laminated. Each card has a picture of an organelle or genetic material on one side and selected information about that organelle or genetic material on the other side.

- The 7 cards bordered in RED are about key organelles in cells.
- The 7 cards bordered in BLUE are about genetic material.



## Speed Date Game

1. Learners are each given either an organelle or genetic material card. Half the class get red cards, half get blue. Allow them five minutes to read and learn the information that is on their card.
2. Encourage learners to participate fully in the Speed Date by offering these guidelines:

- 1. Don't feel nervous and remember to make eye contact with your date.**
- 2. Listen carefully to what your partner is saying.**
- 3. Test each other to see how much you have remembered.**
- 4. Ask lots of questions.**

Learners then go 'speed-dating' to learn about as many other organelles or genetic material as possible.

3. Set up inner and outer seating circles. Make sure the inner circle has the same number of red and blue cards as those sitting on the outer circle.
4. Allow learners 5 minutes initially to share their understanding of the organelle or genetic material that is on their card.
5. After five minutes the teacher rings a bell and asks the inner circle to move 1 place clockwise and the outer circle to move one place anticlockwise.
6. The time learners get for the speed-date discussion decreases by 30 seconds each change over to a minimum time of 3 minutes.
7. Give tips as to how to get the most out of their speed-dating. Circulate learners helping those learners who are having difficulties understanding a particular organelle or genetic material. The teacher also needs to closely monitor time throughout this activity.
8. When all learners have had opportunity to date with the learners in the opposing circle they can then move to do the assessment activity that involves a True/False Quiz.





## Extension activities

- Inside a cell

University of Utah Health Sciences - Genetic Science Learning Centre

<http://learn.genetics.utah.edu/content/cells/insideacell/>

This interactive software allows learners to track across a 3D diagram of an animal cell and focus in and click on the sub-cellular structures which then magnifies and animates the chosen structure providing information on its function. It also allows the learner to click and convert the image to a plant cell to see the additional features that a plant cell contains.

- Learners could consider writing their own rap/poem covering the main sub-cellular structures of animal and plant cells and use this as a memory aid.



Answers		Quiz	
		True	False
1	Chloroplasts contain chlorophyll which captures light energy.	✓	
2	Mitochondria are organelles found inside the nucleus.		✓
3	The nucleus is the control centre of the cell and is found in eukaryotic and prokaryotic cells.		✓
4	The nucleolus is the largest structure in the nucleus and is where the ribosomes are made.	✓	
5	Some structures found in bacteria are small, circular and made of a double-stranded DNA molecule and are separate from the chromosomes. These structures are called plasmids.	✓	
6	Ribosomes are the site of protein synthesis.	✓	
7	Plant cells usually have cells with many small vacuoles that are used for storing food.		✓
8	A dominant allele only shows if the individual has two copies of it.		✓
9	A chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA).	✓	
10	DNA is found inside the nucleus in prokaryotes.		✓
11	The gene of the coding region encodes instructions that allow a cell to produce a specific protein or enzyme.	✓	
12	RNA bases include adenine (A), guanine (G), cytosine (C) and thymine (T).		✓
13	Messenger RNA (mRNA) plays an important role in the movement of the code on DNA into the cytoplasm.	✓	
14	Transfer RNA (tRNA) translates the message within the nucleotide sequence on mRNA into specific amino acid sequences.	✓	



# GCSE (9–1) Twenty First Century Science Suite, Combined Science B Lesson Element

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