

GCSE Biology A (Gateway)

J247/01 B1-B3 and B7 Foundation (Foundation Tier)

Question Set 20

1 (a)

A scientist clones a cauliflower plant.



He uses small pieces of the cauliflower plant called explants.

This is the method the scientist uses to get the explants:

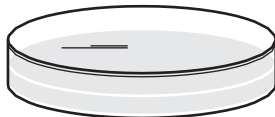
- Place the equipment in a beaker of bleach and swab the bench with 70% alcohol.
- Collect a small piece of cauliflower and place on a white tile.
- Use a scalpel to cut the piece of cauliflower lengthways into small 3–5 mm pieces called explants.
- Measure the mass of the explants.

(i) Suggest why the scientist uses a scalpel rather than a kitchen knife. [1]

(ii) Write down **one** safety precaution that the scientist should take when using a scalpel. [1]

(iii) The explants are then prepared for cloning by placing on an agar jelly plate.

Agar jelly contains water, sugars and minerals.



Agar jelly plate

When the explants are placed on the agar jelly plate, they have no roots or leaves.

Explain why the explants must be placed on the agar jelly plate. [2]

(b) To grow the explants, the scientist places the agar jelly plate in a warm room near to a window.

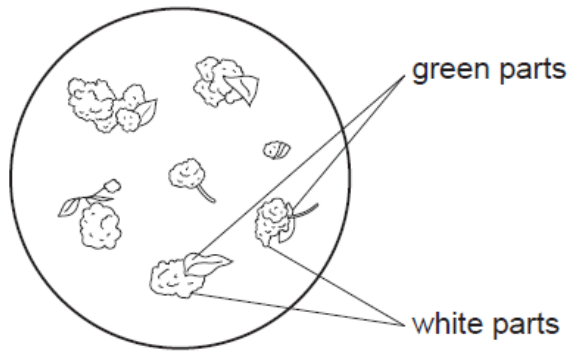
(i) Explain why this will help the explants grow and develop into clones. [2]

(ii) Using a heated cabinet with light bulbs inside the cabinet would improve this method.

Explain why. [2]

(iii) The scientist examines the agar jelly plate regularly.

Growth of the explants is visible in the plate within 10 days and parts of the explants are turning green.



What conclusion can be made about why the explants have parts that are turning green? [1]

(c) The mass of the explants at the start was 15g.

After 10 days the mass of the explants was 28g.

Calculate the percentage increase in mass of the explants.

Give your answer to 1 decimal place.

Percentage increase = % [3]

(d) The cells in cauliflower explants behave the same way as embryonic stem cells do in animals.

Explain why it is more difficult to clone adult animals than to clone cauliflowers. [2]

Total Marks for Question Set 20: 14

OCR

Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge