

## Contents

	<i>Page no.</i>
B5 Growth and development – Foundation Workbook answers	B5-F2
B5 Growth and development – Higher Workbook answers	B5-F5

Further guidance

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<b>9</b>	<b>a</b>	<ul style="list-style-type: none"> <li>• A human egg cell is fertilized in a laboratory and develops into an embryo.</li> <li>• After 5 days, cells are removed from the embryo with a pipette.</li> <li>• These embryonic stem cells are grown in a dish containing nutrients.</li> <li>• The embryonic stem cells develop into different tissues and organs. These could possibly be used for medical treatments.</li> </ul>																
	<b>b</b>	<ul style="list-style-type: none"> <li>• In therapeutic cloning the nucleus of a fertilized egg is replaced with a nucleus from one of the patient's own cells.</li> <li>• In adult stem cells many genes are switched off so the stem cells can develop into only a few types of cells.</li> <li>• If adult stem cells could be 'despecialized' then all the genes would be switched on and they could develop in the same way as in embryonic stem cells.</li> </ul>																
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	<b>b</b>	<ol style="list-style-type: none"> <li>1 In the nucleus, the DNA double strand separates.</li> <li>2 A molecule of mRNA forms along the DNA strand...</li> <li>3 The small mRNA molecule passes through the pores...</li> <li>4 In the cytoplasm, a ribosome joins amino acids...</li> <li>5 The order of amino acids decides what protein is made...</li> </ol>																
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	<b>b</b>	The bending of plant shoots towards light.
	<b>c</b>	(Left) The shoot grows straight up towards the light. (Auxins are evenly distributed.) (Right) Auxins build up on the shady left side of the growing shoot. This causes the cells on the left side to grow faster than the cells on the right, with the effect that the shoot bends towards the right (the light side) as it grows.
	<b>d</b>	If a plant grows towards the light it will capture more light for photosynthesis, so it may increase its rate of food production.