

4 (a) About one third of the injuries to racehorses involve tendon damage. In 2006, bone marrow stem cells were taken from injured racehorses and cultured so that they divided many times by mitosis. Each horse's cells were then injected into its damaged tendons. 80% of the treated horses returned to racing, compared with 30% of those treated conventionally.

(i) Adult stem cells such as these are described as multipotent.

Explain what is meant by the term *multipotent*.

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(ii) Describe how the rate of mitosis is controlled.

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(iii) Suggest how it is possible that bone marrow stem cells could differentiate into the range of cell types needed for repairing injuries.

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