AQA - Cells - A2 Biology P3

1. June/2021/Paper_3/No.2

0 2 . 1 Describe how the human immunodeficiency virus (HIV) is replicated once inside helper T cells (T_H cells).

[4 marks]

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HIV-1 is the most common type of HIV. HIV-1 binds to a receptor on T_H cells called CCR5.

Current treatment for HIV-1 involves the use of daily antiretroviral therapy (ART) to stop the virus being replicated. Only 59% of HIV-positive individuals have access to ART.

Scientists have found that two HIV-1-positive patients (**P** and **Q**) have gone into remission (have no detectable HIV-1). This happened after a blood stem cell transplant (BSCT).

- Patient P was given two BSCTs, and patient Q was given one BSCT.
- All BSCTs came from a donor with T_H cells without the CCR5 receptor.
- In addition, patient P had radiotherapy, and patient Q had chemotherapy. Both of these treatments are toxic.
- Both patients (P and Q) stopped receiving ART 16 months after BSCT.

18 months after stopping ART, **both** patients had **no** HIV-1 RNA in their plasma, **no** HIV-1 DNA in their T_H cells and **no** CCR5 on their T_H cells.

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0	2 . 2	Use the information given to evaluate the use of BSCT to treat HIV infection	ns. [5 marks]