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Q96

'RNA interference (RNAi)' technology has gained popularity in the last few years. Why? 1. It is used in developing gene silencing therapies. 2. It can be used in developing therapies for the treatment of cancer. 3. It can be used to develop hormone replacement therapies. 4. It can be used to produce crop plants that are resistant to viral pathogens. Select the correct answer using the code given below (a) 1, 2 and 4 (b) 2 and 3 (c) 1 and 3 (d) 1 and 4 only Official key: A.

UPSC Civil Services Prelims 2019 · General Studies · 2 marks · Science and Technology

Science, technology, space, defence, IT - Prelims GS Paper I.

Explanation**(a) Official key**

(a) 1, 2 and 4. RNAi silences genes (including viral and oncogenes) and has been used to engineer virus-resistant crops (for example papaya ringspot via gene silencing). Hormone replacement therapy is not an RNAi use. That trio is the official key.

(b)

(b) 2 and 3. Statement 3 is false; dropping 1 and 4 is wrong. Not the key.

(c)

(c) 1 and 3. Statement 3 is false. Not the key.

(d)

(d) 1 and 4 only. Statement 2 is also true: RNAi is explored in cancer therapy. Dropping 2 is not the key.

Summary

Official key is (a). RNA interference knocks down complementary mRNA. That is gene-silencing therapy, including oncology pipelines, and a plant-virus resistance tool. It does not replace hormones. Honour (a).

Related possible facts

These can be asked in a future Prelims paper.

Fire and Mello

RNAi in *C. elegans*; Nobel Prize 2006

siRNA / miRNA

Small RNAs that guide silencing complexes

Patisiran

Example of an approved RNAi drug (later years; principle already known)

GM papaya

Pathogen-derived resistance / silencing of viral genes

HRT

Hormone replacement; not an RNAi application

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