

2018 Mutation STQ

2018 / H2 / IJC PRELIM / P2 Q4

- 1 Crossing over between homologous chromosomes is an important process that gave rise to genetic variation.

Errors during crossing over can result in abnormal chromosomes that will affect the phenotype of an organism.

Fig. 4.1 show the result of an unequal crossing over event in prophase I.

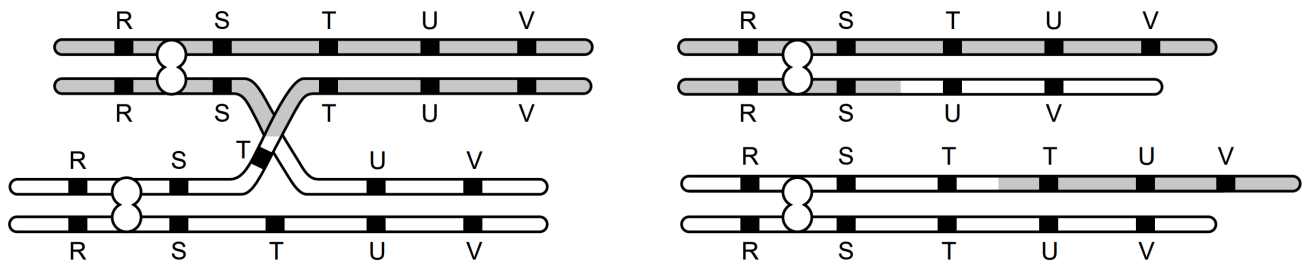


Fig. 4.1

- (a) (i) State the type of mutation that has occurred in Fig. 4.1.

[1]

- (ii) Suggest the possible effects on the phenotype of the organism if protein T is a hormone involved in metabolism.

[2]

Fig. 4.2 shows the human karyotype of one of the most common chromosomal abnormalities. The affected embryos or foetuses with this condition ended up in miscarriages in the first trimester.

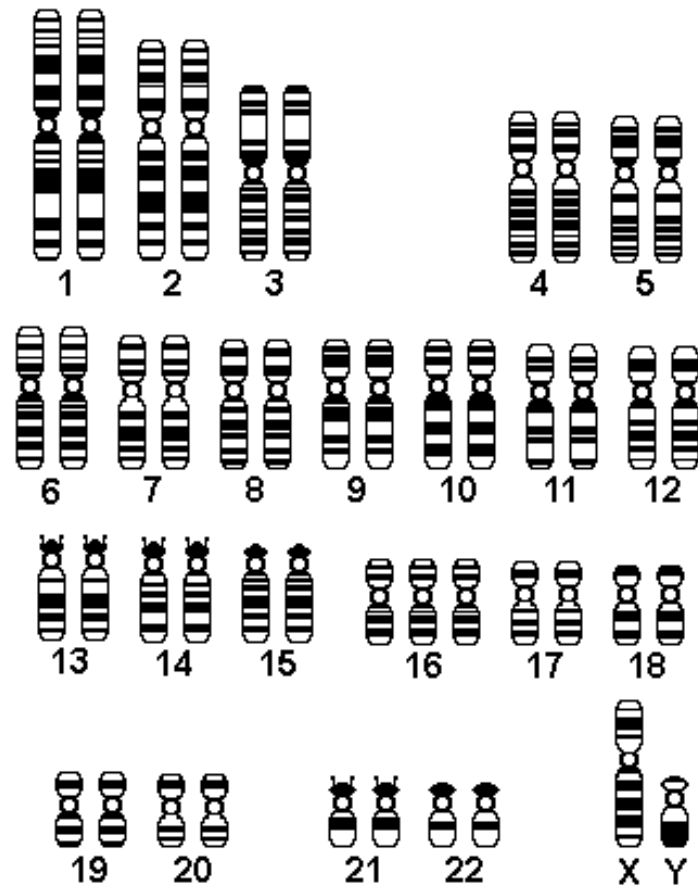


Fig. 4.2

(b) With reference to Fig. 4.2, explain how this condition arises.

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[4]

(c) Fig. 4.1 and Fig 4.2 are examples of chromosome aberration.

Use examples other than the ones shown, outline what does *chromosome aberration* mean.

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[3]

[Total: 10]