

Question 1:

Adrian's karyotype is 47, XXY (Klinefelter). His mother is green/red color blind; his father is not color blind. Adrian can distinguish red from green.

Adrian's abnormal karyotype is the result of

- A. a nondisjunction during meiosis I in the mother.
- B. a nondisjunction during meiosis II in the mother.
- C. a nondisjunction during meiosis I in the father.
- D. a nondisjunction during meiosis II in the father.
- E. one cannot tell in which parent a nondisjunction occurred

Question 2:

Adrian's karyotype is 47, XXY (Klinefelter). He is color blind. Neither his mother nor his father is color blind.

Adrian's abnormal karyotype is the result of

- A. a nondisjunction in his mother.
- B. a nondisjunction in his father.
- C. one cannot tell in which parent a nondisjunction occurred

Question 3:

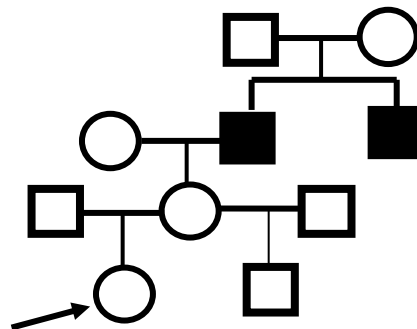
Angelina has Turner syndrome (45, X0); she is green/red color blind.

Neither her mother nor her father is color blind.

Angelina's abnormal karyotype is the result of

- A. a nondisjunction in her mother.
- B. a nondisjunction in her father.
- C. one cannot tell in which parent a nondisjunction occurred.

Question 4: The family tree indicates that 2 brothers in generation II were affected with an X-linked recessive disease (hemophilia).



The woman indicated by the arrow is pregnant. She expects a male baby. The father is healthy. What is the probability that her first boy is affected?

Question 5:

An X-linked recessive gene produces red-green color blindness in humans. A woman with normal color vision whose father was color-blind marries a color-blind man.

5.1) What is the probability that their son will be color-blind?

- (A) 0
- (B) $1/4$
- (C) $1/2$
- (D) $3/4$
- (E) $1/1$

5.2) What is the probability that their daughter will be color-blind?

- (A) 0
- (B) $1/4$
- (C) $1/2$
- (D) $3/4$
- (E) $1/1$