

Genetics

(Week 3 / Lecture 5&6)

1-Which of the following statements is NOT associated with multifactorial disease inheritance

- a. Factors are usually both genetic and environmental
- b. Increased incidence of the siblings having the disease if a person has the disease late in life
- c. Examples include multiple sclerosis, diabetes, and cancer

ANSWER : B

2-Expressivity can be described as:

- a. One mutant gene can cause multiple phenotypic effects
- b. The degree to which a gene is expressed depending on other genetic or environmental factors
- c. All or none expression of a mutant gene

ANSWER : B

3-If an embryo with 46 chromosomes develops from an egg that lost its nucleus, it will most probably become :

- a. Partial mole
- b. Complete mole
- c. Normal conception
- d. The fertilized egg will die before dividing
- e. Fetus that lacks placenta

ANSWER : B

4-Which one of the following karyotypes is most likely to be found in normal human ovarian progenitor cell ?

- a. 22, Y
- b. 46, XY
- c. 46, XX
- d. 23, X
- e. None of the above

ANSWER: C

5-A chromosomal analysis is obtained on a young woman with mild signs of Patau syndrome and reveals a 46,XX/47,XX +13 mosaic karyotype. Nondisjunction is most likely to have occurred in:

- a. Mosaic Patau are not possible to happen because they are incompatible with life
- b. mitosis after fertilization
- c. Parental meiosis II
- d. Parental meiosis I
- e. Parental progenitor cells S Phase

ANSWER : B

6-When a pair of twins is conceived and one embryo dies in the womb. The surviving fetus may absorb some of the cells of its deceased twin. The surviving twin will be :

- a. Tetraploid
- b. Triploid

- c. Mosaic
- d. Chimeric
- e. Partial trisomy

ANSWER : D

7-Pathogenic mutations in TBX5 cause Holt-Oram syndrome which includes cardiovascular (atrial septal defect, hypoplastic left heart syndrome), chest (Absent pectoralis major muscle) and skeletal anomalies (vertebral anomalies, triphalangeal thumb and carpal bone anomalies). The TBX5 phenotypic effect is related to which concept :

- a. Reduced penetrance
- b. Sex limited
- c. Pleiotropy
- d. Multifactorial
- e. Genetic heterogeneity

ANSWER : C

8-45,X/46,XX karyotype was revealed in the peripheral lymphocytes of a Turner syndrome patient. Which of the following is the underlying cause ?

- a. Reciprocal translocation
- b. Nondisjunction in meiosis II
- c. Nondisjunction in mitosis
- d. Nondisjunction in meiosis I
- e. Robertsonian translocation

ANSWER : C

9-The clinical features of patients with Marfan syndrome are caused by unusually stretchable connective tissue. The most observed features in Marfan syndrome affect the eye, the skeleton, and the cardiovascular system. This is an example of :

- a. Allelic heterogeneity
- b. Pleiotropy
- c. Anticipation
- d. Penetrance
- e. Locus heterogeneity

ANSWER :B

